

# The Iron Age

A Review of the Hardware, Iron and Metal Trades.

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## Brotherhood's Compound Engine.

Most of our readers are familiar with the Brotherhood three-cylinder engine, which we have several times had occasion to mention. Recently Mr. Brotherhood has made a modification of his engine, giving it an annular cylinder and compounding it. Messrs. Flaud and A. Cohendet, of Paris, who have a show of small steam engines at the Paris Exhibition, exhibit among them a compound engine designed by Mr. Brotherhood, of the type we have mentioned. Our engraving shows a longitudinal and cross section. Of this engine *Engineering* says:

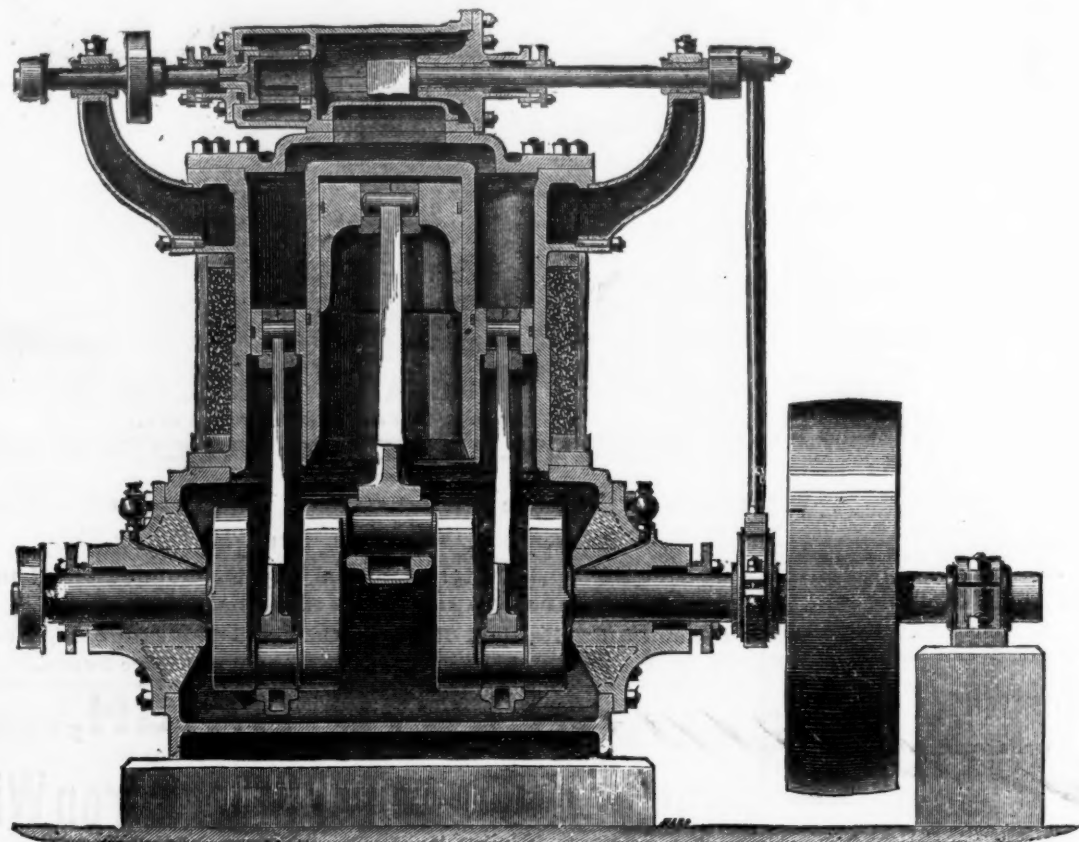
"The engine, which is very simple in its

finding gold, wrote to a friend, Cheong Yum, in 1848, about the new country. Cheong Yum immediately came to the Pacific slope, but, before doing so, told a number of his countrymen of the discovery of gold in America. It was then that the Chinamen began to flock to the Pacific coast. There were at that time no steamers to bring them, so they came in sailing vessels. In 1849 the Argonauts began to arrive from the East, and at that time the Chinese influx was a mere drop in the bucket. Within the next four years the arrivals of Mongolians became more frequent and in larger proportions, so that in 1852 there were 4000 on the coast, 2000 of whom lived in San Francisco.

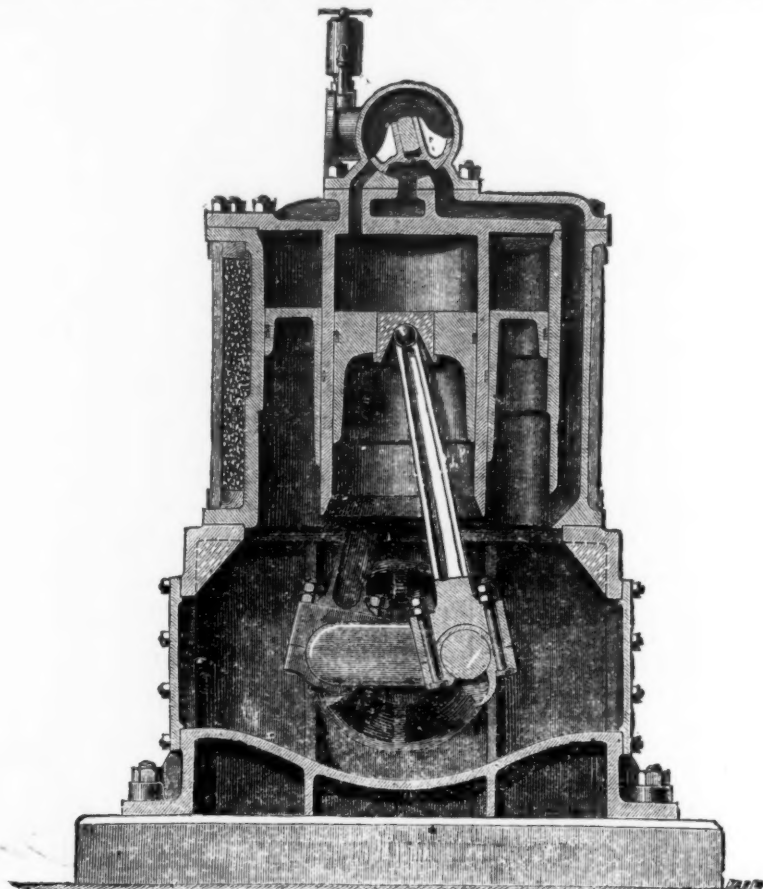
double easily overcome an inequality in the floor. The weight being thus taken in a direct line, the pivot has merely to hold the casters in position, but not to sustain any of the friction or strain caused by the weight; consequently, a very heavy weight can be put upon the casters without causing any side friction. These casters can be applied to a great variety of uses, from the lightest to the heaviest. Out of a great variety of shapes and styles made, we show two in the accompanying illustration, one having a flat plate and the other a pin. The large sizes are especially adapted to heavy articles like refrigerators, large machinery, book cases and similar objects usually considered unsafe

coast or in the westerly current toward Hawaii. It is not uncommon to find the crews dead, although at least 112 persons are known to have been saved by captains on the Pacific, and instances of men landing from the junks are traditionally known. These facts are of special interest, as possibly explaining the origin of the American Indian. On this subject much has been written, and there is reasonably good evidence going to show that the Indian may be a descendant of shipwrecked Japanese brought over here hundreds of years ago by the same current that swept to the coast of California the junk found by the schooner *Parallel* on the 17th instant. The language, some of the

tioned as having seen Gen. Washington on the grounds. When the General visited the furnace he placed a Mr. Berkshire as manager, who took possession in behalf of the government. No doubt the Berkshire hills were named after him. In the lapse of time it was found that the water power was insufficient for working the furnace, and all the movable machinery was removed to Robeson and a furnace started there, which has been in existence ever since. There are still many relics about the blacksmith shop of George G. Sellers, adjoining the furnace, such as stove plates bearing the date 1772, and shell, grape and canister which he dug out of the



Longitudinal Section.



Cross Section.

BROTHERHOOD'S COMPOUND ENGINE, AT THE PARIS EXPOSITION.

construction, is of the annular compound type, with cranks opposite each other. It has only three principal castings—the lower frame, the low-pressure cylinder body and the low-pressure cylinder cover and high-pressure cylinder, which are cast in one. The valve chest is bolted on to the cylinder cover, in which the (very short) ports are cast. It contains a cylindrical throttle-valve, worked by a governor of the form commonly used by Mr. Brotherhood, and a main valve, somewhat of the Corliss type, worked by a single eccentric. As will be seen from the engravings, the action of this valve does not essentially differ from that of a common valve working on a cylindrical face. The cylinders are single-acting only, and the one valve serves for the whole steam distribution. The exhaust steam is allowed to pass down to the space under the piston on its way to the condenser or to the open air. A reasonably early cut-off can be thus easily obtained in the smaller cylinder, the other taking steam, of course, during its whole stroke.

"The design of the connecting rods resembles that used in Mr. Brotherhood's three-cylinder engine, the rods here, as there, being always in compression. A three-throw shaft is used, the bearings being in covers in the lower casting, and each has a stuffing-box and gland at its outer end. The spring rings for the inner side of the low-pressure piston are, it will be seen, placed in a recess in the cylinder instead of in the piston, the low-pressure piston being made with a deep trunk, against the interior of which the rings can work. This is a very neat arrangement, and gets rid of a trouble which has been previously experienced in the packing of annular pistons.

"The engine exhibited at Paris differs slightly in the arrangement of the valves and governor from that shown in our drawings, which represent a somewhat improved design used in the machines now in course of construction. It has cylinders of 0.25 and 0.50 meter (9.84 in. and 19.68 in.) diameter respectively, and is intended to indicate 50 horse-power when running at 500 revolutions per minute. The Paris engine runs very quietly; it is neat and simple in design, takes up little room, and is well constructed. It has not yet been sufficiently long before the public, however, to allow any opinion to be formed as to its working merits."

The first Chinaman who came to America, according to the *San Francisco Chronicle*, was Chum Ming, in 1847. He was a native merchant of Nai Sang, a province of Canton, intelligent and enterprising. He went into the mountains, and,

As soon as the tide of Chinese emigration had set in toward California, the Yeoung Wo and the Kong Chow, the first two of the present Six Companies, began the business of aiding the shipments.

## Martin's Patent Caster.

Messrs. Tucker & Dorsey, of Indianapolis, Ind., are manufacturing and introducing an improved article of cabinet hardware known as Martin's Patent Caster. It is

when placed upon casters. The use of two wheels obviates the "digging" action, always incident to turning a broad wheel in a small circle, or upon its center, and which is so very destructive to carpets and floors. The manufacturers claim special advantages for these casters upon sample stoves, which by their use can be moved about even over rough floors with great facility.

The report from San Francisco of the finding of a Japanese junk off the coast 100

habits, religious beliefs and ceremonies and physical characteristics of the Indian and Japanese of ancient times have points of resemblance which make it probable that the Indian and Japanese are closely related.

**The First Charcoal Furnace in Pennsylvania.**—Col. Jos. L. Stichter writes as follows to the *Reading Times and Dispatch*: From the best traditional information obtained, it appears that the furnace was built about the opening of the eighteenth century

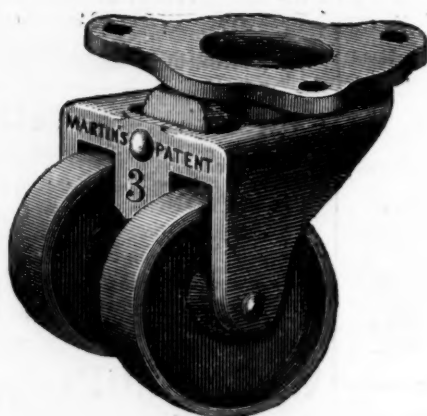
furnace bank. The house is still standing in which Washington stayed over night. It is to be regretted that no precise account is obtainable of the exact date of the erection of the furnace, but it has been sufficiently authenticated that it was built by Richard Patten, a British subject, who afterward sold it to George Eage, of Robeson.

**Advance in Freights to the Far West.**—A large advance in the rate of freights for first-class goods over the Union and Central Pacific Railroads is announced. Also a dispatch from Chicago states that the general managers and freight agents of the railroads leading to the Eastern seaboard from Western points, held a meeting in that city July 31, for the purpose of regulating the Eastern-bound freight rates. The rates adopted a day or two before, to take effect August 1, were approved. The rates were then further advanced, making the grain rates on the basis of 25 cents per 100 lbs. from Chicago, and fourth and special classes on the basis 30 cents. This resolution elicited a long and heated discussion. It was, however, adopted, and on and after August 5, the rates will be as follows:

FOURTH CLASS.			
	Cents.	Grain.	Flour.
Chicago to			
Baltimore.....	27	22	44
Washington.....	27	22	44
Philadelphia.....	28	23	45
New York.....	30	25	50
Boston.....	35	30	60

All articles that have been taken at grain rates will be included hereafter in the fourth class. This makes a further advance in grain of 5 cents per 100 lbs., and 10 cents in meats, &c., that have heretofore taken grain rates. Charge of 2 cents per 100 lbs. will be made on all property for which cars are sent to packing and slaughter houses in Chicago. When a refrigerator car is furnished for cured meats an extra charge of 10 cents per 100 lbs. will be made.

In order to facilitate the transportation of coffee and to preserve it longer, it has been suggested in Germany that it be compressed. For this purpose it is subjected to a pressure of from 40 to 70 atmospheres in suitable cast-iron molds. The coffee comes into the market in a form resembling chocolate, divided as the latter is by ribs. The interior surface of the molds is highly polished, which makes the outer crust of the compressed coffee sufficiently smooth and hard to prevent the escape of the ethereal oil of the coffee. The volume of the coffee thus prepared is reduced to less than one third.



MARTIN'S PATENT CASTER.

constructed with a view to carrying heavy weights for years without injurious wear, and reducing to a minimum the friction which gives so much trouble with many forms of casters in general use.

The Martin caster consists of two ordinary wheels in a single frame loosely pivoted to the plate attached to the furniture. Above and between these two wheels is an anti-friction roller with its axis at right angles to that of the wheels. The whole weight, of course, rests directly upon this friction wheel, and is taken in a vertical line through the center of the axes of the two wheels.

The friction wheel allows the caster to turn with ease, even when heavily loaded, while the bearing wheels being

miles north of that port, is only one of many instances going to show the possibility of this continent having been peopled by Japanese drifted to our shores. The Kuro Shimo, or Black Stream of Japan, flows up past Formosa, Japan, the Kurile and Aleutian Islands, Alaska, Oregon, California, and thence bends westward to the Sandwich Islands. A junk left in the Kuro Shimo would, if not stranded or sunk, make the circuit from Japan to Hawaii. Of 49 junks known to have been thus carried across the Pacific between 1782 and 1876, 19 stranded or their crews landed on the Aleutian Islands, 10 in Alaska or British America, 3 on the coast of the United States, and 2 on the Sandwich Islands. The others were picked up within the currents along the American

by British capitalists, and was first called "Rockberry Furnace." Gen. Washington and his body guard visited the furnace September 17, 1777, for the purpose of hiding all the munitions of war that were then upon the furnace bank, to prevent the enemy from taking possession. It appears that this furnace was largely engaged in manufacturing cannon and shell. Elizabeth Hain, of the Hain family, who was upon the ground when Gen. Washington visited the furnace, used to state in her lifetime that stacks of cannon balls were piled around the furnace as large as grain stacks. Tradition informs us that Jonathan Minnich, who was a blacksmith at the furnace, also saw Gen. Washington. Ishmael Farmer, who was one of the teamsters of the furnace, was also men-



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SEE PAGE 9.**Phelps, Dodge & Co.,**  
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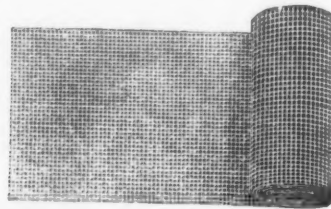
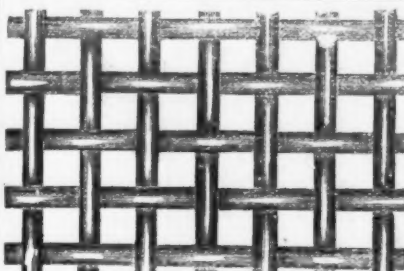
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### Steel for Car Axles.

To the Editor of The Iron Age: Referring to Mr. Brinley's paper on "Open Hearth Steel for Axles," in your issue for July 4th, permit me to suggest that something may be said, and ought to be, in reference to other standard methods of making steel, so that a more complete view may be had by those interested of this whole field of manufacture, one of the most important now occupying the attention of steel makers.

Even if it were true that the uncertainties of making mild crucible steel have been found to be very great, they certainly have not proved insurmountable. This may be clearly seen from the fact that boiler plate of the most acceptable quality has been, and is daily, melted in crucibles, and that a score of other grades can be made at will in the same way and of any required kind or uniformity in quality. So, too, with the Bessemer process, it has been found practicable to make, in the English works particularly, a quality of boiler plate that shall meet every required test, whether in respect to its tensile strength or its stretching, and, above all, in respect to its peculiar property of not hardening when heated to redness and quenched in water.

If, then, in the steel manufacture, as in most other things, the greater really and completely includes the less, it is hardly just to ignore the possibility of making good axles out of crucible steel, even if the cost of melting may be materially in favor of the open-hearth furnace. Still less is it a judicious thing to forget that as soon as the present rush after steel rails is past, the enormous capacity of the Bessemer works will, most assuredly, be turned in part on to axles, and that, too, as ample experience has shown, without the slightest doubt of the

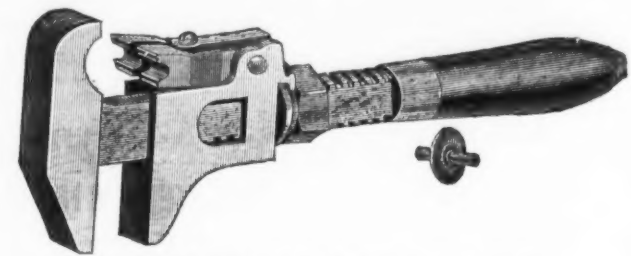
which the hands are attached would not throw a shadow often mistaken for one of the hands themselves. The project recommends itself to smaller cities unable to bear the expense of a costly tower clock with illuminated face.

### Donohue's Improved Wrench and Pipe Cutter.

The accompanying illustration represents an improved wrench and pipe cutter, patented by Mr. Bernard Donohue, 50 John street, New York. The object of the invention is to produce a combined tool which can be employed as a nut wrench, pipe wrench or a pipe cutter at will. It will be seen from the cut that the jaws upon one side operate in the same manner as those of the well-known "monkey wrench." On the opposite side a dog or pawl, carried by the movable jaw, works against the stationary jaw and forms the pipe wrench, which is capable of use upon pipes of a wide range of sizes. The dog, which is also the movable jaw of the pipe wrench, is slotted to receive the small cutter wheel shown below the wrench. Bearings hollowed out across the face receive the journals. The spring jaw, or dog, has a very important advantage in that it holds the jaw against the pipe, keeping it in place so as to prevent the tendency to crush the pipe when the pressure is applied, a fault very common in pipe wrenches.

### Condition of the Rural Population in the Rhone Department of France.

Mr. Peixotto, United States Consul at Lyons, sends the following report of the condition of the agricultural laborers of the Department of the Rhone:



DONOHUE'S IMPROVED WRENCH AND PIPE CUTTER.

result of any tests that may be required or suggested for the product.

The "open hearth," or Siemens process, shares with the Bessemer this very important advantage in cost over the crucible method, that by it the metal may be melted in large single masses or "heats" of from 5 tons to 10 or 15 tons at a time, from which ingots weighing from 1800 lbs. to 3000 lbs. or more may be cast at pleasure, and for many purposes. There is great advantage in the subsequent handling of the metal in these large ingots, even though the final product of their working may be axles or smaller and lighter pieces. It should be noted also in this connection that the open-hearth process has this advantage (which is sometimes of material importance) over the crucible and the Bessemer also, that in the large open-hearth furnace employed for melting, the metal can be kept in a melted condition for any required time, so that its quality can be determined and accurately modified at pleasure to suit the slight differences that may be found to exist in the materials or in the working of the furnace itself. On the other hand, however, those who are skillful in the use of the Bessemer converter long ago reached a striking degree of excellence in their management, and hence in the quality and uniformity of their product, notwithstanding the very brief time that the metal remains under treatment in the converter, and they are daily advancing in this direction. It is perfectly certain that the open-hearth steel makers may expect at an early day a close contest from the Bessemer converters in axles as well as in many other classes of material, a contest, too, in which not an iota shall be waived in the requirements of any standard of quality.

Another phase of the manufacture of steel axles ought to be mentioned and emphasized, and that is the strong probability that at a comparatively early day they will be produced by casting direct to pattern and very closely to their finished sizes. This possibility, and even certainty, has been clearly set forth recently in *The Metallurgical Review*, in Mr. Holley's paper on "Solid Steel Castings," in the statements there given of the practice in the French works at Terrenoire. Without entering at any length into the details of this most interesting branch of the steel manufacture, it may be sufficient to note that by casting axles thus direct to size the wear and tear of hammering and swedging them may be wholly saved, and that there will thus be the least possible expense and loss or waste in turning and finishing them.

It may be a fair question, too, whether with a steel axle made in any way a really useful purpose may not be served by an actual hardening, or, with very mild steel, by a case-hardening of the surface of the journal. It is more likely that the wear of the axle results from the dust that finds its way into the axle box than from any seams in the material, and hence, even with the perfect finish of a steel axle, a harder bearing surface may aid in preventing wear or cutting.

P. BARNES.  
PLAINFIELD, N. J.

**A Substitute for Tower Clocks.**—Reiniger of Stuttgart proposes an ingenious substitute for illuminated tower clocks. It is no more or less than the use of a magic lantern, sometimes employed for street advertising in this country. A small lantern could be so arranged as to throw the picture of a common watch or chronometer upon a suitable white screen in places much frequented at night. The movements of the hands would be quite as distinct as those of a real clock with a transparent face and a strong light behind it; while it would have the advantage over many of these that the axle to

Agricultural laborers are divided into two classes, those who are engaged by the year and live on the farm and those who work by the day. Farm laborers who live in the farm buildings receive, in addition to food and lodging, wages partly paid in money and partly in kind. Those of the latter category earn about 150 francs or \$30 a year. Those of the former receive: Men (working 15 hours) from \$50 to \$100 a year; women, from \$55 to \$65 a year. It is estimated that the cost to the employer in supplying food, shelter, &c., is about \$35 a year. The number of days of labor is for men, 200; women, 120; children, 80. Hours from 13 to 15 per diem.

There are a certain number of laborers who supplement their revenues by the prosecution of a secondary industry, such as weaving, wood-cutting, sawing, wooden shoe-making, cask-making and building. Such an accessory industry may increase their earnings by about \$40 a year. It is calculated that from 8 to 10 per cent. of the agricultural class are engaged in some trade. The married farm laborer who finds himself may earn \$150 per annum, divided thus: Men's wages, \$50; women's wages, \$30; three children's wages, \$40; total, \$150. The cost of living to such a family is calculated as follows: Lodging, \$10.50; bread, \$55; vegetables, \$8.25; meat, \$10; wine, beer and cider, \$7; milk, \$5.25; clothing, \$25; groceries, \$10; fuel, \$8; taxes, \$2; total, \$141. Leaving a balance in his favor of \$9.

It is estimated that there are 9,000,000 families in France, 1,000,000 of which are in easy circumstances. Of the 8,000,000 belonging to the industrial classes, 3,000,000 are inhabitants of towns. Land is very equally distributed among the bulk of the population, and the same is the case with personal property. The rural population is estimated at 70 per cent., the urban at 30 per cent. In 1846 the rural population was 75.58 per cent., the urban 24.42 per cent., showing in France, as elsewhere on the Continent and in the United States, an increasing tendency of population toward cities. Since 1861 the urban population has augmented largely, the rural decreased. There is some tendency the other way at present. Broadly stated, I regard the condition of the agricultural classes in the United States as much superior to that of France, and I may add (from observation and study) to those of Germany, Italy and Austria-Hungary. The agricultural laborer in the United States is better fed and better educated, he is thus physically, mentally and socially the superior of the same class in the countries above mentioned. The peasant class of France, though as a rule ignorant, are remarkably independent. They know how to save, and are therefore generally well to do. This is especially the case with small farmers.

From a comparison of tables made before the Franco-German war and from information derived, as I believe from reliable sources to day, I am of the opinion that the farm laborer receives higher wages than he did five years ago, but the cost of living has increased in quite as large proportion. As a general rule and viewed from a purely material standpoint, the French farmer, small as well as great proprietor, is better off than his brother agriculturist in America.

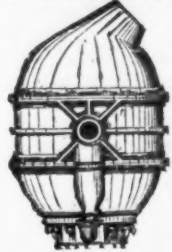
From such observation and opportunity as I have had, I believe there is more manual labor performed here than in the United States. Consequently, it appears to me that there is a good field (I refer particularly to this and adjacent departments) in this portion of France for the introduction of agricultural machines and implements of husbandry, and our American manufacturers might do well to send their agents and cultivate this business.



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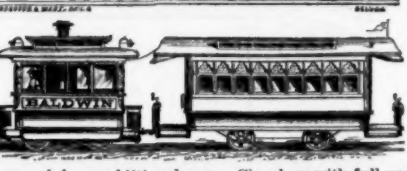
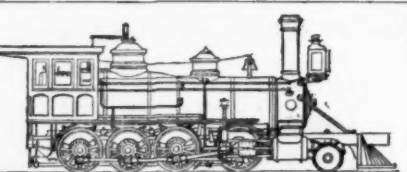
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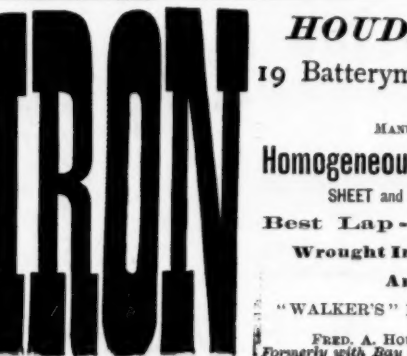
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## Iron.

## Edward J. Etting.

IRON BROKER AND COMMISSION MERCHANT.

230 S. Third St., Philadelphia, Pa.

CENTRAL IRON WORKS, - Harrisburgh, Pa.

## Boiler Plate, Tank Iron, &amp;c.,

PIG, BAR AND RAILROAD IRON.

Old Rails, Scrap, &amp;c.

STORAGE WHARF & YARD,  
DELAWARE AVENUE ABOVE CALLOWHILL STREET,  
connected by track with railroad.

Cash advances made on Iron.

The Iron-Masters'  
LABORATORY.

Exclusively for the

Analysis of Ores of Iron, Pig and Manu-  
factured Iron, Steels, Limestone, Clays,  
Slags and Coal for Practical  
Metallurgical Purposes.

No. 339 Walnut St., Philadelphia.

J. BLODGET BRITTON.

This laboratory was established in 1866, at the in-  
stance of a number of practical Iron Masters, ex-  
pressly to afford prompt and reliable information  
upon the chemical composition of the substances  
above mentioned, for smelting and refining pur-  
poses. The object being to make it at once a con-  
venient, practically useful, and comparatively in-  
expensive adjunct to the Furnace, Forge and Rolling  
Mill.

## CHARGES TO IRON WORKS.

For determining the per cent. of Pure Iron in  
an ordinary Ore..... \$4.00  
For the per cent. of Pure Iron, Sulphur and  
Phosphorus in do..... 12.50  
For each additional constituent of usual oc-  
currence..... 1.50  
For those of unusual occurrence or difficult  
to determine, the charge must necessarily  
depend upon circumstances.  
For determining the per cent. of Sulphur or  
Phosphorus in Iron or Steel..... 7.00  
For each additional constituent of usual oc-  
currence..... 5.00  
For the per cent. of Carbonate of Lime, and  
insoluble Silicious Matter in a Limestone..... 10.00  
or each additional constituent..... 2.00  
For the per cent. of Copper, Vanadium, and  
Purifiable Matter, fixed Carbon, and Ash in Coal..... 12.50  
For determining the constituents of a Clay, Slag,  
Coke, or of an Ash in Coal the charges will cor-  
respond with those for the constituents of an ore.  
For a written opinion or letter of instruction the  
charge must necessarily depend upon circum-  
stances.  
Printed instructions for obtaining proper average  
samples for analysis furnished upon application.

## BOSTON ROLLING MILLS

Manufacture

Extra quality small Rods, from best selected Scrap Iron.

SWEDISH AND NORWAY SHAPES,  
Nail and Wire Rods. Also,

Horse Shoe Iron, Hand Made

Horse Shoes &amp; the Boston

Horse Shoe.

BOSTON ROLLING MILLS, W. B. ELLIS, Treas.

Office, 17 Battery March St., Boston.

## BRADLEY, REIS &amp; CO.,

NEW CASTLE, PA.,

Manufacturers of every description of

## PLATE &amp; SHEET IRON

OFFICE, at Works.

## Bonnell, Botsford &amp; Co.,

Iron, Nails &amp; Spikes.

YOUNGSTOWN, OHIO.

## Spooner &amp; Collins,

COMMISSION AGENTS,

## PIG IRON

Blooms, Bar, Sheet &amp; Hoop Iron.

217 N. Third St., St. Louis.

## ANVIL NAIL CO.

We desire to call the attention of the trade to

our new manufacture of

## Steel Horse Shoe Nails,

made from metal prepared in the Martin-Siemens

Furnace by our PATENT process, which produces a

nail having all the requisites for a

## PERFECT HORSE SHOE NAIL.

The well-known desirable properties of a perfect

nail are, that the point should be sharp, the SHANK

stiff, to drive without crippling under the hammer,

sort enough to clinch readily, while sufficiently

tough to avoid all danger from the "drawing the

clinch" or breaking the neck under the head.

These properties we claim for the

## "ANVIL HORSE NAILS."

In the process of manufacture the metal is com-

pressed under the head, which gives the nail great

strength where it is required (between the shoe

and hoof), and the cold rolling gives it a stiffness

attained in no other way, while the quality of the

metal used insures a clinch and point un-

surpassed by any nail ever offered in the market.

Samples and prices sent on application.

## ANVIL NAIL CO.,

65, 67 and 69 Washington St., New York.

## BORAX.

Concentrated Borax in sacks.

Selected concentrated Borax in barrels.

Refined Borax in cases.

Pulverized Borax in barrels.

Pulverized Borax in pound and half pound packages.

Being Sole Agents for Messrs. Smith Bros., OWNERS OF

THE MINE, we are enabled to sell at the lowest prices.

WM. T. COLEMAN &amp; CO.,

New York, 130 Pearl Street.

SAN FRANCISCO, CAL., cor California and Front Sts.

## New Patents.

We take the following abstract of new  
patents, recently issued, from the official  
record:

## CARPENTERS' PLANES

To L. Bailey, Hartford, Conn.—April 30.

The bit is adjusted longitudinally by a  
screw bearing both a right and a left-hand  
thread, thus forming a differential screw.

1. The double-threaded adjusting screw

f, made in one piece, and having a right-

hand thread working in its support or bear-

ing, and a left-hand thread working in the

bit carrying nut, in combination with a plane

body and bit.

2. The ring-pipe b, having the valves d e  
f g, combined with the measuring vessels D  
E, said ring-pipe being made larger in diam-  
eter in its upper than in its lower half.  
3. The combination of the ring-pipe and  
its valves d e f g with the toothed segments  
y, and with the toothed wheel B and its  
crank C, said crank moving between stops  
h and i.  
4. The combination of the crank-spindle n  
with the pinion o, slides p q, pawls r s,  
ratchet wheel F, and index G.

## Wealth and Science.

In the Popular Science Monthly Prof.

2. In combination, stud a, nut c, adjust-  
ing screw f, button j, bearing pin k, and the  
plane bit.3. The combination of the plane bit, the  
button j, the stud a, and the rotating shaft  
f, provided with the pivoted handle g.

## VALVE FOR STEAM ENGINES.

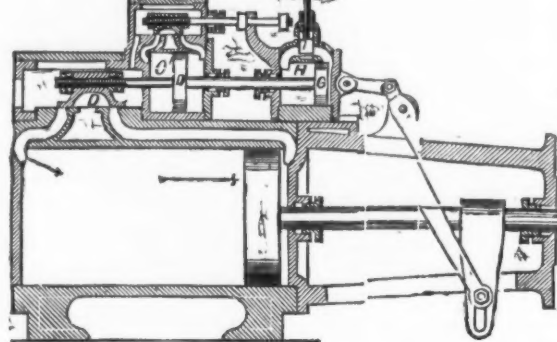
To Ezra Cape, Hamilton, and James R.

Maxwell, Cincinnati, Ohio.—April 30.—The

combination of movable cataract cylinder

H and piston G, the stationary auxiliary

cylinder C' and piston D', and the main

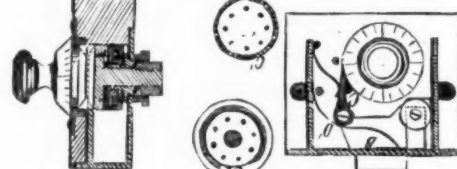
valve D, the auxiliary piston moving the  
main valve in a direction to admit steam to  
the main cylinder, and the cataract cylinder  
H moving in a direction to cut off steam,  
whereby the main valve becomes a regulat-  
ing cut-off valve.

## PERMUTATION LOCK.

To Wm. G. Van Buskirk, Fishkill Land-

ing, and Gordon Hay, New York, N. Y.—

April 30.—The combination of the alternate

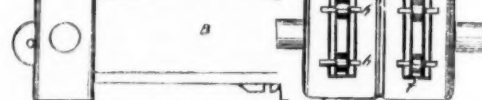
perforated and pin disks with their beveled  
notches C', the pivoted dog C, and stumps i  
't bolt B and spring D' to throw it outward.

HAMMER FOR CHARCOAL BLOOMS, CAST IL-

LETS, &amp;c.

To Geo. M. Dillon, Chautauqua Lake, N.

Y.—April 30.—1. The arms B B, having

tenons extending through and beyond the  
head A, in combination with the pins h, that  
pass through transverse holes near the ends  
of said tenons and keys f, that project from  
head to form a rest for said pins.2. The mortised husk A, the tenoned arms  
B, and the wooden keys f in combination.

## SEAL LOCK.

To Wm. Dunn, Hamilton, Canada.—April

30.—1. The bar B, provided with the groove

or recess b, in combination with the case A

and the hasp D.

2. The hooked springs I I, attached to the

bar B, for the purpose of drawing out the

card or seal.

3. The combination of the opening C' in  
the side of the case, the glass C, fixed in the  
opposite side, and the aperture C', made  
through the bar, with the case A and the  
bar B.4. The combination, with the case A and  
the bar B, provided with hooked springs I I,  
of the fixed toothed roller E.

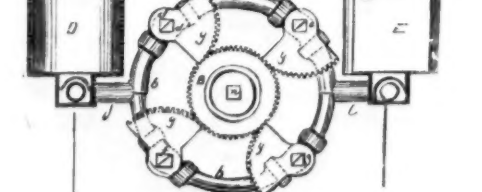
5. The catches J, in combination with the

bar B and the case A.

## LIQUID MEASURE.

To Aaron Bernstein, Friedland, Prussia.—

April 30.—1. The measuring apparatus com-

posed of the ring-pipe b, having valves d e f  
g, branch pipes j l, and measuring vessels  
D E.Youmans has an article from which we take  
the following interesting passage in regard  
to Cavendish the chemist, and the American  
method of considering wealth:An historical illustration will perhaps bring  
out more clearly this view, which is now  
coming to be regarded as so peculiarly  
American. There lived in England, in the  
last century, a man of science named Henry  
Cavendish, who was born in 1731 and died  
in 1810. He was a gentleman of fine cultiva-tion, an excellent mathematician, a profound  
electrician and a most acute and ingenious  
chemist. He published many papers, con-  
taining results of recondite investigations  
and the most important discoveries. He  
was not only a great original thinker, but a  
most indefatigable and accurate experi-  
menter, and one of his main lines of research  
was the chemical constitution of the atmos-  
phere. He made no less than 500 analysesof the air, and it is to him that we owe our  
chief knowledge of the composition of the  
breathing medium. Now, there is not an  
American who will not commend all this as  
most proper and admirable. But there is  
another side to the case. Henry Cavendish  
was a man of enormous wealth, for whichhe cared absolutely nothing. He was one  
of the greatest proprietors of stock in the  
Bank of England, and when on one occasion  
his balance had accumulated to \$350,000,  
and the directors, thinking it too much  
capital to lie unproductive, asked him if they  
should not invest it, he simply replied:  
"Lay it out, if you please." That small  
portion of his wealth which he could make  
use of in his investigations was so used, but  
he did not allow the remainder of it to divert  
his thoughts in the slightest degree from the  
unremitting prosecution of his scientific  
labors. He died worth \$7,000,000, which  
was an immense sum of money at the begin-ing of this century, but he had not the slight-  
est interest in those objects for which wealth  
is generally prized. Now, the whole case  
being given, to the eye of the typical Amer-  
ican Henry Cavendish will be regarded as a  
fool. "With all that money," the repre-  
sentative American would say, "I could keep  
a yacht, and stud of fast horses, and build a  
church, and endow a college, and send a  
dozen missionaries to the heathen, and run  
a whole political campaign at my own  
expense: and you say this odd creature  
actually spent life in the smudge and steches

## CHESTER IRON COMPANY,

MINERS AND SHIPPERS OF

## Magnetic Iron Ore.

The "BLUE" (Red Short) and "RED" (Neutral) Bessemer Ores, from Hackle-

barney and Chester, New Jersey.

Price "Blue" Ore hand-broken and selected for July is \$2.50 cash, f. o. b. Hacklebarney Mines.

J. WESLEY PULLMAN, Treas., 407 Walnut St., Philadelphia.

## The Cambria Iron and Steel Works,

Having enjoyed for over TWENTY YEARS the reputation of producing the best quality of

## RAILS,

have now an annual capacity of

100,000 Tons of Iron and Steel Rails, Splice Bars, &amp;c.

ADDRESS,

CAMBRIA IRON COMPANY,

No. 218 South 4th Street, Philadelphia.

Or at the Works, JOHNSTOWN, PA.

Or J. S. KENNEDY &amp; CO., New York Selling Agency, 41 Cedar St., N. Y.

## THE PHOENIX IRON CO.,

410 Walnut Street, PHILADELPHIA.

Manufacturers of

## CURVED, STRAIGHT AND HIPPED

## Wrought Iron Roof Trusses, Beams, Girders &amp; Joists,

and all kinds of Iron Framing used in the construction of Iron Roof Buildings.

## DECK BEAMS, CHANNEL, ANGLE AND T BARS

curved to template, largely used in the construction of Iron Vessels.

## PATENT WROUGHT IRON COLUMNS, WELDLESS EYE BARS,

For Top and Bottom Chords of Bridges.

Railroad Iron, Street Rails, Rail Joints and Wrought Iron Chairs.

## REFINED BAR, SHAFTING, and every variety of SHAPE IRON made to Order.

Plans and Specifications furnished. Address,

SAMUEL J. REEVES, President.

## The Standard Steel Works.

## LOCOMOTIVE AND CAR WHEEL TIRES,

Manufactured from the celebrated OTIS STEEL.

BRAND

## STANDARD.

Quality and efficiency fully guaranteed. Prices as low as any of the same quality.

We manufacture

Heavy and Light Forgings, Driving and Car Axles, Crank Pins, Piston Rods, Etc.

Works at Lewistown, Pa. Office, 220 S. 4th St., Philadelphia, Pa.

## JAS. ROWLAND &amp; CO.,

Kensington Iron, Steel &amp; Nail Works,

920 North Delaware Ave., - - PHILADELPHIA,

Manufacturers of the

## Anvil Brand Refined Merchant Bar Iron.

Also, the James Rowland & Co. Kensington Nails, cut from their  
Refined Anvil stock. Also, Plow and Cultivator Steel, Rounds,  
Squares, Flats, Bands and Hoop Iron.

Correspondence with Dealers solicited.

## PENCOYD IRON WORKS.

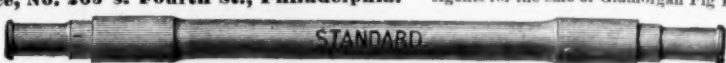
## A. &amp; P. ROBERTS &amp; CO.,

Manufacturers of

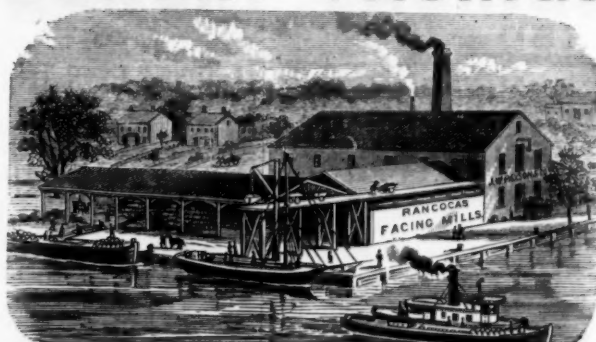
## CAR AXLES.

BAR, ANGLE, TEE AND CHANNEL IRON.

Office, No. 265 S. Fourth St., Philadelphia. Agents for the sale of Glamorgan Pig Iron.



## FOUNDRY FACINGS.



MANUFACTURERS' FOUNDRY

SUPPLIES.

MOLDING SAND

GERMAN LEAD, BITUMEN, SIEVES, MACHINERY SAND,  
AMERICAN LEAD, ANTHRACITE, SHOVELS, BRASS  
GRAPHITE, CHARCOAL, BRUSHES, CHANDELIER  
PLUMBAGO, MINERAL, CRUCIBLES, STOVE PLATEJ. W. PAXSON & CO. } OFFICE & STOREROOMS,  
514, 516 and 518 Beach St., Philadelphia, Pa.



## THE BEST KITCHEN AND TOILET WARE.

It is made of  
Decarbonized Iron  
and Covered with  
a Perfect Enamel  
of Unquestionable  
Purity.



Its Merits have  
been tested and are  
vouched for by the  
Foremost Chemists  
and Experts in the  
Land.

MANUFACTURED ONLY BY THE  
**St. Louis Stamping Co.,** St. Louis, Mo.  
PRICE LISTS, DISCOUNTS AND TESTIMONIALS FURNISHED THE TRADE.

## McNEALS & ARCHER,

BURLINGTON, N. J.

Flange Pipes.

General Foundry Work.

### CAST IRON PIPES

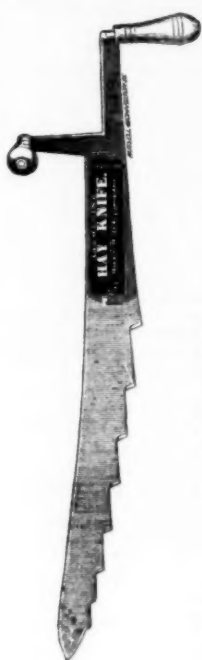
FOR WATER AND GAS.

### Light Castings and Metal Patterns

A SPECIALTY.

**TAYLOR & BOCCIS,**  
Iron Founders,

Nos. 65, 67, 69, 71 & 73 Central Way, CLEVELAND, O.  
CORRESPONDENCE SOLICITED.  
Will make estimates on completed work when desired.



### LIGHTNING HAY KNIVES,

WEYMOUTH'S PATENT.



This knife is the best in use for cutting down hay and straw in mow and stack, cutting fine feed from bale, cutting corn stalks for feed, cutting peat and ditching marches.  
The blade is best cast steel, spring temper, easily sharpened, and is giving universal satisfaction. A few moments trial will show its merits, and parties once using it are unwilling to do without it. Its sales are fast increasing for export as well as home trade, and seems destined to take the place of all other Hay Knives.  
They are nicely packed in boxes, one dozen each, of 50 lbs. weight, suitable for shipping by land or water to any part of the world.

Manufactured only by

**Hiram Holt & Co.,**

East Wilton, Franklin Co., Maine.

For sale by the Hardware Trade generally.

SEMPLE & BIRGE MFG. CO., Agents at St. Louis.

### OFFICE OF F. HABERMAN,

MANUFACTURER OF

## Stamped, Plain and Japanned TIN WARES,

AND  
Patent Corrugated Bottom Coal Hods,  
294 PEARL STREET,  
NEW YORK, Aug. 1, 1878.

TO THE TINWARE, HARDWARE AND STOVE TRADE—GENTLEMEN: I am pleased to inform you that my new and greatly varied Price List is now completed and ready for distribution, and will be sent on application to any dealer.  
The most important feature of this List is, the goods are all distinctly classified, prices and discounts named on same, a matter the trade will appreciate, as it avoids the constant necessity of inquiring for quotations on goods outside the regular line. Awaiting your favorable replies, I remain, yours, &c.,  
**F. HABERMAN.**

### "WROUGHT BUTTS."

SEND FOR PRICES TO

**The McKinney Mfg. Co.,** { Works, Allegheny City, Pa.  
{ P.O. Address, Pittsburgh, Pa.

## Southern Advertisements.

## Southern States Coal, Iron & Land Co.

LIMITED,

ENGINEERS, IRON FOUNDERS & BOILER MAKERS,  
Coal Miners and Fire Brick Manufacturers.

The Only Makers in the Southern States of  
**WASHED FOUNDRY COKE,**  
Free from Slate and Sulphur.  
**Machine-Made Brick, Limestone, Lumber and Shingles.**  
**FARMS TO LET.**  
Apply to the HEAD OFFICE, South Pittsburg, Tennessee.

**W. A. HOSKINS,**

DEALER IN

**MINERAL LANDS,**  
Chattanooga, Tenn.

Offers for sale, at very low figures, some of the most valuable Charcoal and Coke Properties within the district. Full particulars furnished on application.

**Vulcan Iron & Nail Works,**  
Chattanooga, Tenn.,

MANUFACTURERS OF

BAR IRON, NAILS, RAILROAD SPIKES, FISH BARS AND BOLTS BRIDGE  
AND CAR BOLTS, AND FORGINGS GENERALLY.

**ROANE IRON COMPANY,**

Manufacturers of and Dealers in

**Pig and Railroad Iron.**

CHATTANOOGA, - - - - - TENN.

**WASON CAR & FOUNDRY COMPANY,**  
Chattanooga, Tenn.,

Manufacturers of

RAILWAY FREIGHT CARS, Car Wheels and Castings.

**TENN. COAL & RAILROAD COMPANY,**

A. M. SHOOK, General Manager, - - - Tracy City, Tenn.

Proprietors of the Seawater mines, capacity of 50,000 bushels of coal and coke per day.  
Several important institutions of learning, including the University of the South, also the celebrated Berea College, are located upon the line of this Railroad.  
Being also the proprietors of several extensive tracts of very fine lands, offer special inducements to colonists. Communications addressed to the General Manager will receive prompt attention.

**T. J. BROWN,**  
Rockwood, Tenn.

Miner and Contractor of  
Fossiliferous Ores.

A superior article delivered at low figures at any furnace within the district or at any point on the Ohio River. Refer to Roane Iron Co., Chattanooga Iron Co., or S. B. Lowe, Chattanooga.

**S. Whinery, Civil Engineer,**  
CHATTANOOGA, TENN.

Late Division Engineer Cincinnati Southern Railway.  
Will prepare plans and superintend construction of Bridges, Buildings, Roofs, Roads, Streets, Water Works, Sewers, Canals and other public works. Examinations, location and construction of railway lines a specialty. Surveys, examination and reports made of mineral lands. Business attended to thoroughly and promptly. First-class references given.

**S. B. LOWE,**

**Pig Iron, Storage & Commission.**

Dealer in Charcoal and Coke Pig Iron for Foundry, Forge or Car Wheel purposes.

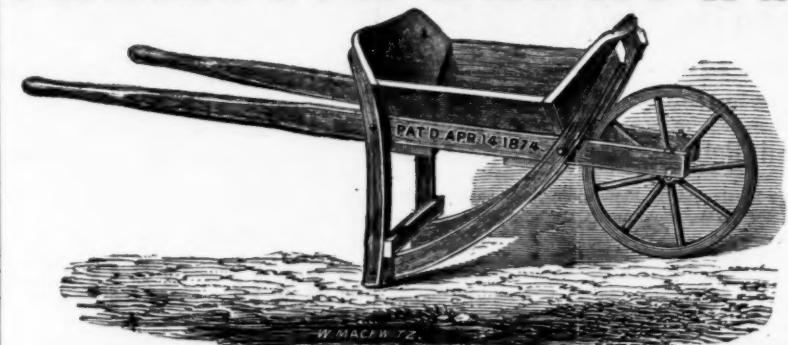
Chattanooga, Tenn.



**GEORGE W. BRUCE,**

No. 1 Platt St., New York,  
Agent for CLEMENT & MAYNARD,  
Great inducements offered in their Superior Shovels, Spades and Scoops and Trowels, as well as Hoes. A large stock on hand.

## CHAMPION BARROWS.



WITH WOOD OR IRON WHEELS.  
A first-class article and a specialty, that will make a demand in any market and afford a good margin for dealers. We are prepared to furnish them in large quantities. Manufactured by  
**BRYAN MANUFACTURING CO., Bryan, O.**  
**SEMPLE & BIRGE MFG. CO.,** Sole Western Agents, ST. LOUIS, MO.  
For Sale by THE NEW YORK PLOW CO., General Eastern Agents, 55 Beekman St., New York.

## STANDARD NUT CO.,

Pittsburgh, Pa.,

MANUFACTURERS OF

**HOT PRESSED**

**Square & Hexagon Nuts,**

**R. R. FISH BARS,**

**BOLTS,**

**SPIKES,**

**RIVETS, &c.**

**IRON AND STEEL DROP FORGINGS**

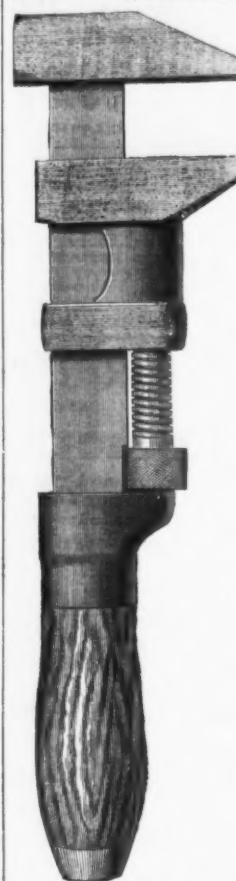
All shapes, small and large, including  
Gun, Pistol, Wrench Bars, &c. Also, Die Sinking. Manufacturers also of  
Bricklayers', Moulders' and Plasterers' Tools, Saddlers'  
Round and Head Knives.

**WILLIAM ROSE & BROS.,**

36th & Filbert Sts., West Philadelphia.

## STANDARD GIRARD WRENCH.

WARRANTED.



FOR  
**STRENGTH**  
AND  
**Durability**  
IT HAS  
**NO SUPERIOR,**

**GUARANTEED**  
IN  
EVERY RESPECT.

Wrought Bar, Head  
and Screw.

Owing to the increased demand for these justly Popular Wrenches, we are now manufacturing more than any other establishment in the world.

Our Wrench having been imitated by other manufacturers, we have adopted the above Trade Mark, and will hereafter stamp all our goods.

SEND FOR  
TERMS and PRICES.

GIRARD WRENCH MFG. CO., Girard, Pa.

PATENT CONVEX

Fluting & Smoothing Iron.



1st. It can be used as an ordinary Smoothing Iron.  
2d. It is a Fluting Machine as well as a Smoothing Iron. 3d. The Fluting Attachment being made of brass, and convex in form, it has all the advantages of the crank machine. 4th. It combines the two articles in one, taking up the room of but one machine, and is always ready for use.

A. A. WEEKS, Manufacturer,

No. 82 John Street, New York.



**SHOOTS, VINTON & CO.,**

Manufacturers of

**Wooden Water Pipe,**

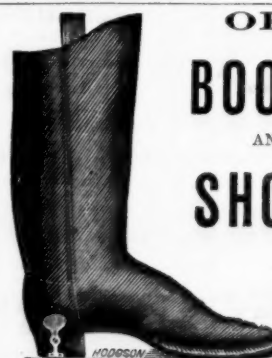
And all kinds of Chain Pump Tubing

(J. D. Shoots' Patent, July 3d, 1877.)

J. D. SHOOTS,  
C. E. VINTON,  
S. H. CONKLING,  
R. COLWELL.

FACTORY:  
**Horseheads, N. Y.**

The above Patent for sale for all States except New York and Pennsylvania.



**OLD  
BOOTS  
AND  
SHOES**

Can be Straightened  
AND NEW ONES KEPT STRAIGHT  
BY USING

**LYON'S PATENT  
Metallic**

**HEEL STIFFENER.**

Send for a new Illustrated Price List for 1878.

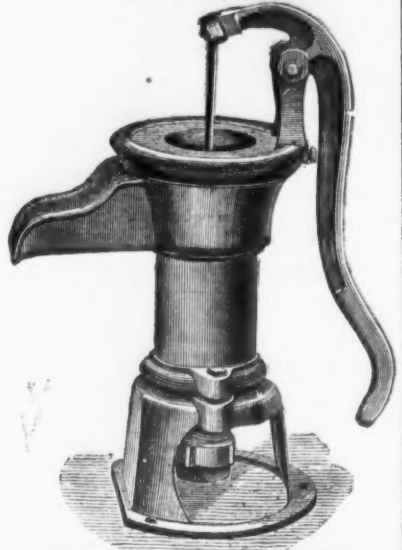
**N. LYON,** Sole Manufacturer,  
ALBANY, N. Y.

**Stove Repairs.**

Repairs for Stoves made at Troy, Albany, Rochester, Cleveland, Buffalo, Boston, St. Louis, Quincy, Chicago, Milwaukee and elsewhere, at  
W. C. METZNER,  
127 W. Randolph St. Chicago, Ill.

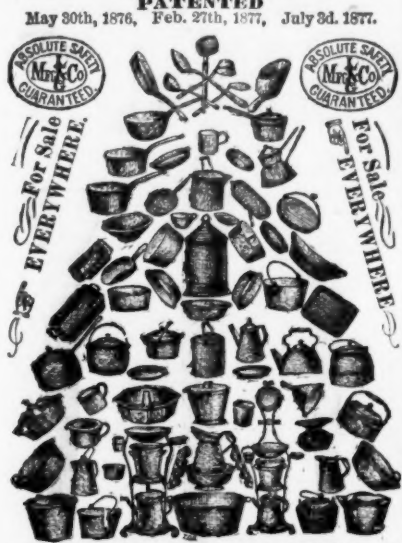


The Largest Pump Works in the World.  
Over 800 Different Styles.  
**PUMPS, STEAM PUMPS, ROTARY  
PUMPS, CENTRIFUGAL PUMPS,  
PISTON PUMPS,**  
Tanners, Paper Mills, Fire Purposes, suitable for all  
situations imaginable.

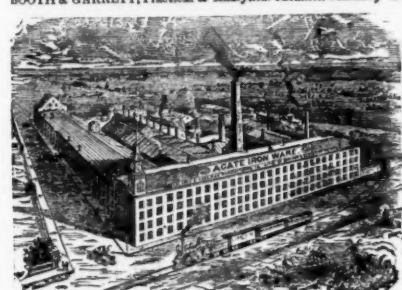


Also, HAND FIRE ENGINES.  
Send for Catalogue. Address,  
**RUMSEY & CO.,**  
Seneca Falls, N. Y., U. S. A.  
Branch House, 93 Liberty Street, N. Y.  
MARCUS C. HAWLEY & CO., San Francisco and  
Sacramento, Cal., General Agents for the Pacific Coast.  
JUSTUS SCHMIDT, Agent, Hamburg.  
L. M. RUMSEY & CO.,  
Branch House, 311 N. Main St., St. Louis, Mo.

**AGATE IRON-WARE**  
PATENTED  
May 30th, 1876, Feb. 27th, 1877, July 3d, 1877.



The absolute Purity and Safety of  
Agate-Iron Ware is certified to by the  
following eminent Chemists:  
R. OGDEN DOREMUS, M. D., LL.D., of College of the City of N.Y.  
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HERBERT G. TORREY, U. S. Assayer, Office, 20 Wall St., N. Y.  
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Pumps, &c., also, highest medal at PARIS  
in 1867, and Philadelphia, 1876, accom-  
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**Centennial Spring Hinges.**

This Hinge has two flat coil  
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broad, solid bearings in the knuckle,  
which do not wear down readily and  
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therefore can be used for either right  
or left hand. By actual test it has an  
average of 50 per cent. more power  
than other Spring Hinges in common  
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In Competition with the World at Philadelphia, 1876.

**TWO FIRST MEDALS, and TWO DIPLOMAS OF MERIT**

The following are the points that the Judges officially announce as the basis of their award of the  
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1st. For their Protected Bearings (the Howe is the only Scale with Protected Bearings), which makes  
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2d. For their Strength.  
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4th. For their Economy in Construction.  
5th. For their first-rate Material and Workmanship.  
6th. For their various original Improvements and Adaptations (which being patented are exclusively  
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**The Improved Howe Scales**  
MADE BY THE  
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Are Guaranteed Superior to all others.

For Plans, Prices and other information, address,

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**Covering Steam Pipes with Mineral  
Wool.**

The protection of steam pipes from loss of  
heat by radiation is very important, and the  
importance of non-conducting jackets is too  
well known and appreciated to need any  
comment. The substitution of mineral  
wool, of which we have had occasion to  
speak previously, for felt or plaster cements,  
&c., is a point of considerable importance to  
plumbers, tinsmiths, carpenters and builders  
in general, since they are as competent to  
apply the material and can as effectually  
jacket a pipe as the professional boiler  
coverers or felt men. The engravings illus-  
trate the methods of applying mineral wool to  
pipes, whether for hot or cold water or  
steam. The material being non-combustible,  
and not affected by decay of any kind nor  
dampness is especially valuable for the pur-  
pose, especially as it is one of the best non-  
conductors known. The material is sold  
and applied in its loose, dry state and loosely  
stuffed into the jacketing, which is kept at  
a proper distance from the pipes by wire  
staples, studs, or collars of metal or wood.  
The wood is not in danger of burning, as  
not sufficient heat can penetrate through the  
incombustible wool.

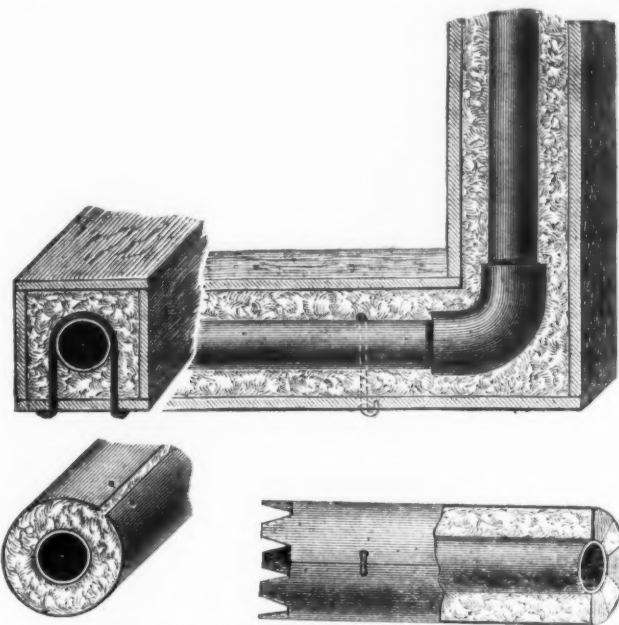
The mammoth boiler in the Grand Opera  
House, corner Twenty-fourth street and  
Eighth avenue, measuring 386 square feet  
surface, is covered with mineral wool under  
wood lagging screwed on wooden collars.  
The wood is painted black walnut and pre-

Water..... 6.539  
Volatile matter..... 34.599  
Fixed carbon..... 57.596  
Sulphur..... 1.118  
Ash..... 5.446  
Coke, per cent..... 63.259  
Color of ash..... Cream.

This sample was from the Diamond mine.  
A comparison of Reynoldsville coke with  
Connellsville is as follows:

	Reynoldsville.	Connellsville.
Water.....	5.500	4.370
Volatile matter.....	34.575	34.560
Fixed carbon.....	57.056	59.576
Sulphur.....	1.027	1.221
Ash.....	11.822	9.113
Color of ash. Red with white specks. Reddish for n.		

Reynoldsville is but 192 miles from Buf-  
falo, and coal from this district is largely  
used here. There is no question that good  
coke can be made there, and the matter is  
the commercial one of freight and expenses.  
We obtained from Mr. Absalom Nelson an  
interesting account of the experiments of  
the Jefferson Coal and Coke Company in  
coke making. Mr. Nelson was sent from  
Buffalo to the mines in the winter of 1875-76  
to represent the owners of the mines in try-  
ing, practically, the value of the coal for  
coke. One beehive oven was built, under  
the supervision of a competent English coke  
maker, and about three car loads of coke  
were made. With the exception of the  
necessity for washing the coal, the coke was  
said to be very satisfactory, working well in  
cupolas here and elsewhere. Mr. Nelson  
says that a good profit can be made selling  
coke made from Reynoldsville coal for \$3.50



MINERAL WOOL PACKING FOR STEAM AND WATER PIPES.

sents quite a contrast to the irregular and  
ungainly shapes of boilers clothed in felt.

The Pennsylvania Railroad Company uses  
mineral wool on horizontal boilers under  
sheet iron jackets.

To plumbers mineral wool is likely to  
prove of great value in protecting pipes under  
ground, water tanks, or other cold water  
fixtures, as the moisture does it no harm.  
Mr. A. D. Elbers, 26 1/2 Broadway, is the  
manufacturer.

**Cheap Coke for Western New York.**

The Buffalo Courier says: We promised  
last week to obtain for our readers some  
account of what has been done toward  
furnishing Buffalo with cheap coke pro-  
duced at some of the mines from which we  
now receive our chief supplies of bituminous  
coal. The nearest coal mines are in the  
southern part of McKean county, Pennsylv-  
ania. The Buffalo and McKean Railroad,  
about which so much has lately been heard  
in connection with oil transportation, con-  
nects the mines of the Buffalo Coal Com-  
pany with the Buffalo, New York and  
Philadelphia Railroad at Larrabee's Station,  
the distance being about 22 miles; the en-  
tire distance to Buffalo is about 103 miles.  
Experiments have been made in a crude  
way in coking this coal, with results satis-  
factory so far as showing the capabilities of  
the coal for coking, but also demonstrating  
the fact that to make good coke the coal must  
first be thoroughly washed. This is not,  
we may say here, a peculiarity developed  
by the McKean county coal, but is shown  
by all the different experiments with coal  
from all of the various mines of which we  
have any knowledge. In fact, after grinding  
and washing any coal will make better and  
purer coke than if that operation be omitted.  
At present it is doubtful if any attempt  
will be made to manufacture coke in this  
district, as the managers of the Buffalo  
company consider it, under existing circum-  
stances, more profitable to use the coal. The  
Pennsylvania geological survey report of  
1875 gives the following analyses of three  
samples of this coal; No. 4 is an average  
sample of the coal from which Connellsville  
coke is made:

	1	2	3	4
Water.....	1.130	1.300	1.170	1.250
Volatile matter.....	33.090	39.830	35.440	30.107
Fixed carbon.....	53.006	52.063	43.992	59.616
Sulphur.....	1.874	1.727	1.708	.784
Ash.....	10.900	5.080	17.690	8.233

Coal with over 20 per cent. of volatile  
matter is considered a real bituminous, from  
15 to 20 per cent. a semi-bituminous, and  
below that it becomes a gaseous anthracite.  
The object of washing is of course to reduce  
the quantity of sulphur and ash.

Passing over the B. N. Y. and P. Railroad  
to the Emporium we reach the junction of  
that road with the Philadelphia and Erie  
Railroad; on this latter road, a few miles  
below Emporium we strike the Cameron  
county mines which send large amounts of  
bituminous coal to this market for steam  
purposes. We do not hear of any coke being  
made here, however, so that without giving  
any description of this coal we go on to  
Driftwood, and there take the low grade  
division of the Allegheny Valley Railroad  
and pass into the coal fields of Jefferson and  
Clarion counties. At Reynoldsville we find  
an excellent coking coal (providing it be  
washed), bearing the following composition  
on the same authority quoted before:

Iron, of June 29, says: The excessive  
heat on Wednesday, which was about 120  
degrees in the sun at Wigan, had a singular  
effect on the railway metals between Wigan  
and Manchester, on the London and North-  
Western line, near Platt Bridge Station.  
The up line to Manchester was found on  
that afternoon bulging for eight lengths in  
the shape of an S at one point, the metals  
and sleepers having been bodily moved  
nearly two feet. The rails appear to have  
been set too tightly, and on the heat ex-  
panding them they have been twisted off  
the original course. Fortunately, no acci-  
dent occurred, the mishap being discovered  
as a passenger train, which stops at the  
station, approached; steps were immediately  
taken to reset the metals, but there was  
some interruption to traffic in consequence  
of the trains having to be worked on one  
line. At first it was thought that the shift-  
ing of the line was due to a landslip, but it  
was afterward discovered that this was not  
the case, and that it was entirely due to the  
extraordinary heat.

M. Teuret, according to the Chemical News,  
has discovered a new alkaloid in the bark  
of the pomegranate tree. It is volatile  
and powerfully basic, forming well-defined  
salts. It precipitates the chlorides of pal-  
ladium and gold, but not that of platinum.  
It gives a white precipitate with the salts of  
lead, mercury, zinc and silver. The new  
body is named (in honor of M. Pelletier, pre-  
sumably) pelletierin.





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## NEW



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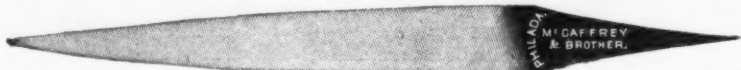
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Superior Hand-Cut  
**FILES AND RASPS,**  
MADE FROM IMPORTED STEEL. EVERY FILE WARRANTED.  
**FULLER BROS., Sole Agents,**  
89 Chambers and 71 Reade Streets, N. Y.

Granted for



**McCAFFREY & BRO.,**  
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For everything (and every size), from a hat or cap to an exhibition building.

Kitchens, Laundries, &c., ventilated without draft. Durable, strong, without rivets or solder. Oiled for six months. Each one has storm cap. Retail price, size six inch diameter, \$1.00 and upwards; apparatus with which any one can cut circles in glass, 15 cents each.

Protective Ventilators avoid drafts, exclude dust, dampness, malaria and germs of disease; adopted by hospitals, schools, institutions, &c.; applied to any window or room.

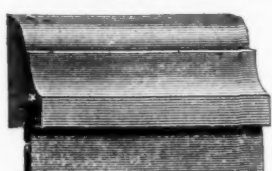
Prof. A. L. Loomis, M. D., University of City of New York, writes as follows: "From my personal experience and that of my patients who have used your Ventilator during the past six months, I am convinced that your method of removing dust, impurities and dampness from the atmosphere is the best which has as yet been proposed. By it the air in an apartment can be constantly changed without causing drafts. I would especially recommend its adoption in sick rooms, sleeping apartments, nurseries and school rooms."

Air Filters and Moisteners, placed over hot-air registers of furnaces, &c., prevent dust and supply steam filtered air. Prices and discounts to the trade sent on application.

The "Economy" Molding Weather Strip is perfect in every respect. By enlarging edge of rubber or felt, and making slot in molding to correspond (see engraving), we save all other expense of molding. Once purchased it will last a lifetime, because rubber, etc., has only to be removed by taking old piece out of either end of molding, and sliding in a new piece. By this method of securing rubber all uncertainty of fastening or undoing of glue or tacks is overcome.

Rubber supplied with enlarged edge and instructions to enable Car Manufacturers, Carpenters, Builders and far off trade to make slots in Sashes, Doors, Mouldings, &c., and thus make perfect Weather Strips.

No. 6.



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**Bolt and Rivet Clippers,**

For cutting off the ends of bolts and rivets, on carriages, wagons, harness, &c.

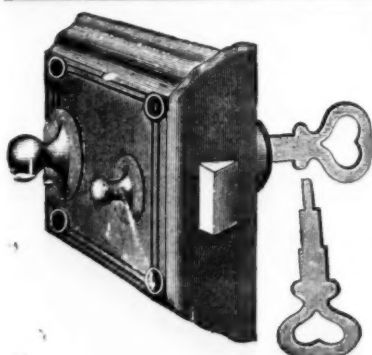
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**Extension Cylinder Night Latches.**

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Cylinders adjustable for doors from 1 1/4 inch to 2 inches.

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**FILES & RASPS,**

Best Cast Steel.

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Every File warranted.  
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American Screw Co.'s Wood, Machine and  
Rail Screws, Stove and Tire Bolts, Rivets, &c.  
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G. F. Warner & Co., Carriage Clamps.  
We have also on hand a general assortment of Hardware.



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(Centennial Award.)

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This is one of the best-selling Locks in the market, and affords the dealer a large profit. It is thoroughly and strongly made—of the best material—very handsome in appearance, and every Lock is warranted. Orders solicited. Address as above.  
Lock Box 105, Bridgeport, Conn.

**THE VICTOR PLANES**

Are the Best.



No. 10 1/2, Circular Plane, Price, \$4.50 each.  
The above cut represents L. Bailey's Patent Plane designed for Circular work, either concave or convex. It works on a straight line or in any degree of circle down to thirteen inches in diameter. Both ends are moved simultaneously with one hand and instantly secured at any desired degree of circle without resort to the slow manipulations of a fine threaded screw in making the changes. If desired the connecting plate may be detached, when the ends will act independently and can be adjusted to different curves, as is sometimes necessary on special work, such as Stair Rails, &c. Every part is strong, simple, compact and AT HOME. It has no competitor in practical utility.

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Amateurs will find their wants fully met in our list of Tools. On receipt of list price we will send to any address in the United States, by mail, postage paid, any tool found in our list excepting Nos. 6, 7 and 8, which being too heavy will be expressed on same conditions. Always order by list number. Send for illustrated Price List. Address

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Hartford, Conn.

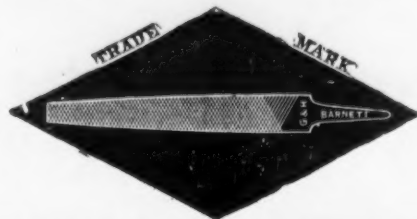
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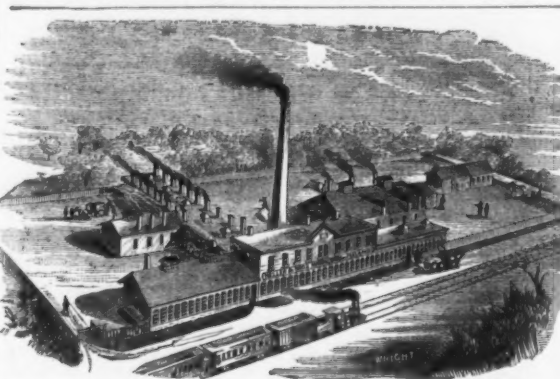
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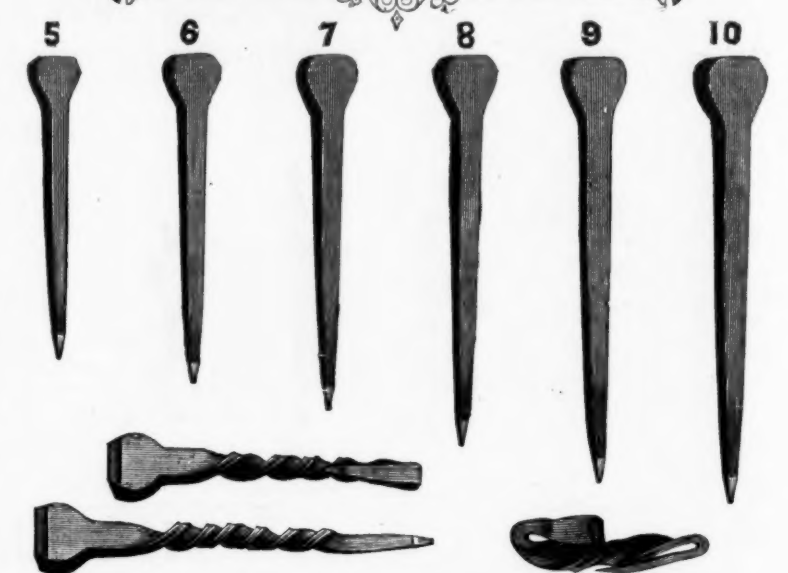
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**HAMMERED AND FINISHED**



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Are Hammered Hot,

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Quality is **Fully Guaranteed.**

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The Abendroth & Root Manufacturing Company, sole owners of the Letters Patent, and manufacturers under the same, of Root's Spiral Metallic Tubing, grooved and riveted seam, now offer for sale the territory west of the Rocky Mountains, in the United States, and the Letters Patent issued for Canada and all other foreign countries, together or separately, including complete working drawings or machinery (if required) for manufacturing.

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## Copper and Iron Tacks, Tinned Tacks, SUPERIOR SWEDES IRON TACKS

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Weighing 12 lbs.  
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This Scale has an  
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FINE TEMPERED STEEL SPRINGS,  
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From 1/4 inch wide upward. Warranted tougher than  
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Cut Showing Round Platform.

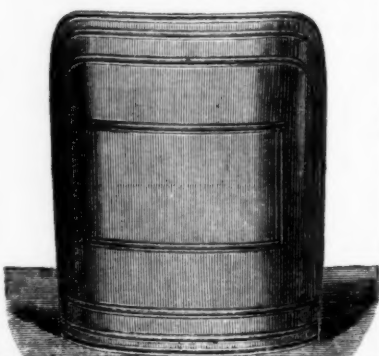
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## ANSONIA Bronzed Fire Screen,

With Ornamented Mouldings.

PATENT APPLIED FOR.

The Portable Bronzed Fire Screen or  
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niture, woodwork, paper or varnish from heat.  
Being constructed of metal, with firm and substan-  
tial edges, curved in form to stand alone, it may be  
easily adjusted to any position about a stove, before  
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## UNION CHAIN WORKS,

REITER & MORTON,  
Pittsburgh, Pa.,

Manufacture all kinds of

Coil, Cable, Crane, Railroad, Wagon and Agricultural Chains,  
From Best Standard Brands of Iron.

Our Chains are all thoroughly tested and warranted, and will be found equal to the  
best of either home or foreign make.

Prices the very Lowest.

## PHILIP S. BIGLIN.

Successor to W. F. SHATTUCK & CO.,

Manufacturers' Agent for

## AMERICAN HARDWARE,

100 Chambers St., New York.

Shattuck's Union and Counter Scales.  
Pheasant's Axes, Hatchets, Picks, &c.  
Wellman's Gimlet's, Gimlet Bits, &c.  
Griswold's Augers, Auger Bits, &c.  
Halsey & Co.'s Stocks and Dies.  
Yew's "Genuine" Wrought Claw Bells.  
Barton's Hand and Sleigh Bells.

Matthys's Britannia and Cocoa Dippers.  
Eddy's Refined Lamp Black.  
"Eagle" Axe, Pick and other Handles.  
"Eureka" Flint, Sand and Emery Papers.  
Certified Forged Horse Nails.  
Tackle Blocks, Spokes, &c., &c.

## DARLING, BROWN & SHARPE

Providence, Rhode Island,

MANUFACTURERS OF

## United States Standard Rules,

AMES' UNIVERSAL SQUARES,

Patent Hardened Cast Steel Try Squares,

## THE AMERICAN STANDARD WIRE GAUGE,

Bevel Protectors, Hardened T Squares and Bevels, Center Gauges,

Steel, German Silver & Boxwood Triangular Scales, Vernier

Calipers, Caliper Squares and Rules, Plumb Bobs,

Paper Drawing Scales, Willis' Odontographs, Steel Straight Edges,  
and T Square Blades.

MEDALS AWARDED: Paris Exposition, 1867; Vienna Exposition, 1873; Philadelphia, 1876.

Illustrated Catalogue sent per mail on application.

## The Electric Light as Applied to Work- shops, &c.

The Gas Light Journal publishes a long  
and valuable paper on the subject of the  
electric light as applied to workshops, which  
gives us another view of the subject from  
that usually presented by newspaper cor-  
respondents, and at the same time shows very  
plainly what obstacles exist to prevent its  
immediate and universal adoption.

Much has, during the last little while, been  
said and written about the electric light, and  
the probability of its partially or entirely  
superseding the use of coal gas and other  
means of artificial illumination, and many  
doubts and fears have been expressed and  
acted upon from time to time, causing  
relative fluctuations in the commercial value  
of undertakings such as those which most of  
us are in some way connected; but, hitherto,  
the ultimatum of each spasmodic action of  
this kind has been a return to the former  
and original value of the concerns alluded  
to. These periodical fluctuations may be  
principally attributed to the apparently suc-  
cessful experimental results which are from  
time to time brought before us by gentlemen  
in some cases devoting their entire times,  
means, and energies toward the further  
development of this kind of light, which has  
undoubtedly, by their efforts, been brought  
to a most wonderful stage of success. But  
experiments of this kind are generally con-  
ducted under circumstances the most favor-  
able to a successful accomplishment of the  
end desired for the time being, and are  
usually wanting in many of the practical  
elements essential to a commercially useful  
and continuous application of the principles  
involved, so that when these principles come  
to be worked out in a manner calculated to  
be of practical utility, many failures, more  
or less complete, have to be encountered, and  
many difficulties to be overcome before the  
end aimed at is reached.

This seems to have been especially the case  
in the employment of electricity for  
producing light. Many and numerous are  
the methods that have been tried to create,  
by its agency, an artificial light superior to  
any that was previously known, and the  
most successful of these has undoubtedly  
been what is commonly known as the electric  
candle, which seems to be neither more  
nor less than two currents of electricity  
communicated to two tapers of carbon, the  
points of which are maintained at a regu-  
lated distance, while the carbon particles of  
each taper are being consumed to create  
the light desired. It is not my inten-  
tion to draw any invidious compar-  
isons between the light thus created and  
that generated from gas coal, for such a  
comparison is beyond the scope of this pa-  
per; my object is merely to give expres-  
sion to some observations obtained from  
a view of such light in actual use in work-  
shops of very considerable magnitude, and  
this I venture to do in the belief that such a  
sight is one of no little interest, and one  
which has, perhaps, not been personally in-  
spected by all of us.

The apparatus which is used in producing  
the light I speak of is what is commonly  
known as Siemens', and is of considerable  
magnitude, as the space it is desired to  
illuminate is extensive. There are two such  
in operation in different shops—one in a  
boiler shed and one in a fitting shop, both  
belonging to the same firm of engineers.  
The electricity required for the production  
of the light is generated by a powerful ro-  
tary drum lined with insulated wires, which  
is driven speedily round its axis by a four  
horse-power engine, and against this drum  
gently impinge fixed brushes of brass with  
but little friction. The mechanical force  
thus employed creates the electricity, which  
is conveyed to coils of insulated wire, and  
these are in course conveyed from where  
the generator is stationed to such position as  
the electric lamp may be desired to stand;  
in this case a distance of about 120 feet.  
These wires are then connected to the car-  
bon tapers or pencils, which are about 18  
inches long and half an inch thick, and are  
so fixed (one from the top and one from the  
bottom) on a delicate and most ingeniously  
constructed self-adjusting instrument,  
called the lamp, by which the relative  
distance of the carbon points,  
when once adjusted by the operator,  
is maintained, checked and regu-  
lated by the same currents of electricity  
which produce the light. One pair of car-  
bons lasts about four hours and requires to  
be replaced by a new set; but as the top  
carbon is consumed much the quicker of the  
two, lasting only about one-third of the time  
that the lower one lasts, the interruptions of  
the light are much more frequent and irregu-  
lar than once in four hours.

The light from each of the two electric  
lamps that I speak of is intense in its  
brilliance, and has, when looked at, a very  
decidedly dazzling effect on the eyes, some-  
what akin to that experienced when one  
looks at the sun with the naked eye. The  
lighting portion of the arrangement is ele-  
vated a considerable distance from the  
ground level, in order to diffuse the light as  
much as possible and to obviate the discom-  
fort occasioned by its effect on the eyes, and  
the light created shines a beautiful white  
clear light, brighter in quality, but somewhat  
like in color to the light reflected from the  
moon at its full on a very clear night, and it  
gives the coal gas flames which are seen in  
its neighborhood a dull yellow, candle-like  
appearance, which contrasts unfavorably  
with its clearer rival. Where the light from  
the electric lamp is obstructed by workshop  
materials or tools, a dense, dark shadow is  
cast behind these, and it is here that the coal  
gas proves its almost infinite divisibility and  
is used to disperse the darkness occasioned  
by the brighter light, which cannot thus be  
subdivided. These shadows might or may  
possibly through time be partly lightened by  
the use of reflectors, arranged in suitable  
positions to throw back the light, instead of  
having recourse to gas jets; but it seems to  
me that this is in some cases almost imprac-  
ticable from the fact that the reflectors  
would require to be continuously moved or  
in motion to obtain the desired effect, and  
where economy in the lighting arrangement  
is the desideratum, this would add much to  
the cost of the electric light. The effect of  
the new light, as used in the boiler shed,  
seemed to me to be more agreeable and less

pernicious to the eyesight than in the  
fitting shop, for in the latter, where  
the fittings and tools are principally  
formed from polished metals, the reflection  
is more severe than in the former, where  
the dull iron is generally used, and from the  
reflection from which comparatively little  
discomfort is experienced.

The fact of the carbon points being so  
quickly consumed, and requiring so much—  
almost constant attention, and the variability  
of the distance of the carbon points from  
each other, caused by the more or less rapid  
and eccentric consumption of the carbon  
particles—a defect which even the beautiful  
adjusting mechanism cannot altogether  
obviate instantaneously—are drawbacks  
against the use of this beautiful light; for  
as soon as the distance of the points is  
varied, so soon is the intensity of the light  
affected, and lessened or increased, as the  
case may be, thus giving to the light a dar-  
gerously fluctuating effect in general (which  
is far from pleasant), and in some cases  
totally extinguishing it, both faults of a very  
serious nature, when it is considered that,  
without the assistance of the constant and  
reliable coal gas supply, the danger, incon-  
venience and expense of such irregularities  
as those of this electric light are such as to  
lead to the destruction or damage of the  
materials, workmanship and tools for the  
guidance of which the light is intended. A  
supply of coal gas must also be necessary at  
each change—and they are frequent—of  
carbon points, unless the place could afford  
to be in total darkness while the operation  
is being conducted, or a second electric lamp  
be fixed, to work while the first is having its  
carbons rearranged.

The lamp, properly so-called, is in itself,  
as I have said, a most ingenious automatic  
arrangement, very delicate in its action and  
therefore liable, one would think, to get out  
of order. Certainly it takes a deal of attend-  
ing to while in operation and requires almost  
constant watching.

It may be well for me to mention here  
that the two electric lights alluded to in my  
observations were not brought into use with  
a view to economize coal gas, nor have they  
tended toward such a result. The object  
aimed at was the clearer illumination of  
the area inclosed by the buildings, and in  
this respect they seem to answer admir-  
ably.

I hope on some future occasion to enter  
more fully into detail as to the comparative  
cost, utility, convenience and physical effects  
of light from coal gas, as compared with  
those of the electric light; but on the face  
of observations such as those I have had, it  
seems clear that the light given by electricity  
as much transcends the quality of that pro-  
duced from coal as do the indefinite divis-  
ibility, cleanliness and ease in application of  
coal gas exceed these attributes as applied  
to the electric light.

Rates of Wages for Railway Labor in  
France.—Mr. Peixotto, United States Con-  
sul at Lyons, furnishes the following table  
showing the rates of wages paid to the em-  
ployees of the principal railways in France,  
and remarks: I have derived my informa-  
tion from the most authentic sources, and  
therefore have no hesitation in declaring it  
to be reliable. On comparing these rates  
with those paid for like or similar labor in  
the United States, it will be seen that our  
employees and workmen are paid very much  
higher wages, and though the cost of living  
is greater in the United States, this differ-  
ence is more than made up in the superior  
comforts which the American workmen pos-  
sess. On the whole, there appears to be no  
valid reason why our railway employees of  
every rank and condition should not, on  
comparing and contrasting their pay and  
condition with those of their brethren in  
France, be every way contented and satis-  
fied:

RATES OF WAGES OF EMPLOYEES OF THE PRINCIPAL RAILWAY COMPANIES IN FRANCE, JUNE, 1876.			
Engine drivers (engineers on loco- motives) on passenger & freight trains, 4 classes.....	\$405.40 @	\$579.15	
Stokers (firemen), those who fire the engine with coal, 3 classes.....	289.58 @	347.49	
Conductors (chiefs of the trains), 3 classes.....	308.88 @	347.49	
Chiefs of stations (in principal towns).....	250.97 @	1,351.35	
Deputy chiefs (in principal towns) Watchmen.....	250.97 @	694.98	
Chiefs of baggage.....	231.66 @	318.53	
Baggage men.....	289.58 @	463.32	
Chiefs of the gangs (workmen).....	231.66 @	308.88	
Chiefs of the porters.....	200.62 @	463.32	
Porters and servants.....	193.05 @	308.88	
Overseers of workmen.....	250.97 @	289.58	
Chiefs of freight and engine de- pots, 4 classes.....	888.03 @	1,158.30	
Chiefs of bureaus & chief clerks.....	386.10 @	772.20	
Clerks.....	231.66 @	347.49	
Auxiliary clerks.....	173.74 @	231.59	
Telegraphy { Employees.....	231.66 @	318.53	
tyer.....	212.35 @	250.97	
Lampists.....	231.66 @	308.10	
Switchmen.....	231.66 @	308.88	
Controllers.....	289.58 @	579.15	
Ticket agents (men and women).....	260.62 @	637.66	
Greasers.....	193.05 @	250.97	
Workmen.....	173.74 @	243.24	

Solicitor Raynor, of the Treasury Depart-  
ment, has made a report in the case of the  
wrecked steamer Metropolis entirely ex-  
onerating the owners. He has thoroughly  
sifted the testimony and concluded that the  
vessel was stanch and strong when she left  
this city, and that the loss of life is to be at-  
tributed to the incompetency of the life-saving  
crew. This decision will surprise many  
people, including some of those who were  
on board of the steamer when she was  
wrecked. It is possibly true, but it is very  
hard to reconcile it with most of the facts  
in the case. The conclusions drawn from a  
given set of facts do not strike us as fol-  
lowing the ordinary rules of antecedent and  
consequent.

An English newspaper, noting the fact  
that Pennsylvania Anthracite coal has been  
introduced in Italy, selling for \$7.72 per ton  
and yielding equally good results to iron  
founders who use it as English coke, which  
costs them \$11.58 per ton, declares that the  
Anthracite coal will probably supersede the  
use of coke. Over 200,000 tons of English  
coke are now annually sent to Mediterranean  
ports. The English journal adds: "Perhaps  
at some future day the Americans will be  
good enough to try the experiment of sup-  
plying the British householder with coal fit  
for domestic consumption at a reasonable  
cost. Our own coal merchants have hard y  
succeeded in their enterprise."



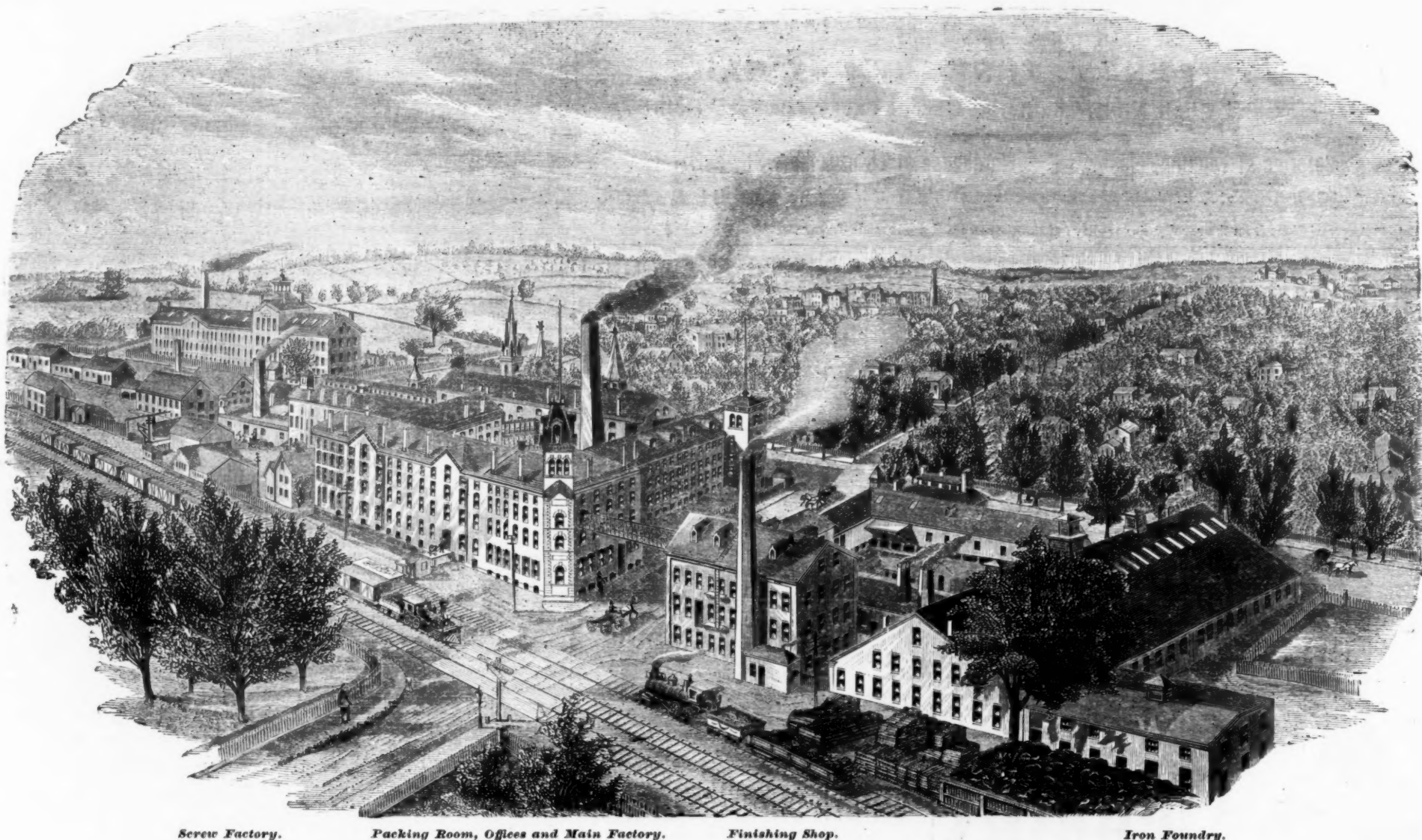
# RUSSELL & ERWIN MANUFACTURING COMPANY

Manufacturers of **HARDWARE.**

FACTORIES, - - - - NEW BRITAIN, CONNECTICUT, U. S. A.

MANUFACTURERS' AGENTS AND DEALERS IN GENERAL HARDWARE AT OUR

WAREHOUSES: NEW YORK, 45 & 47 Chambers Street; PHILADELPHIA, 425 Market Street; BALTIMORE, MD., WM. H. COLE, Agent, 17 South Charles Street.



*Screw Factory.*

*Packing Room, Offices and Main Factory.*

*Finishing Shop.*

*Iron Foundry.*

WORKS OF

THE RUSSELL & ERWIN MANUFACTURING COMPANY,

NEW BRITAIN, CONNECTICUT, U. S. A.

## IRON AND BRASS WOOD SCREWS.

Our Screws are always for sale at **LOWEST** prices made by responsible manufacturers.

We do not guarantee prices.

**ASSORTMENT COMPLETE, ORDERS FILLED PROMPTLY.**



## Cutlery.

## FRIEDMANN &amp; LAUTERJUNG,

Manufacturers of PEN AND POCKET CUTLERY.

Solid Steel Scissors, Shears, Razors,  
Russia Leather Straps, Hones, &c.

"ELECTRIC RAZORS,"

And the celebrated "ELECTRIC SHEARS." Nickel Plated  
Boys.

Agents for the BENGALL RAZORS.

AMERICAN TABLE CUTLERY, BUTCHER KNIVES, &amp;c.

91 Chambers and 73 Reade Sts., N. Y. 423 N. Fifth St., ST. LOUIS, MO.

## MERIDEN CUTLERY CO.

The Oldest Manufacturers of Table Cutlery in America.

THE "PATENT IVORY" HANDLE TABLE KNIFE.

## CELLULOID

HANDLE FOR TABLE CUTLERY. A most beautiful and perfect substitute for Ivory. Also makers  
of all kinds of TABLE, BUTCHER AND HUNTING KNIVES.  
Illustrated catalogues with prices sent to the trade on application. 49 Chambers St., New York.

THE  
**LAMSON & GOODNOW**  
88 CHAMBERS ST. N.Y.  
MFG. CO.  
GARDNER'S PATENT  
AMERICAN TABLE  
CUTLERY & C.

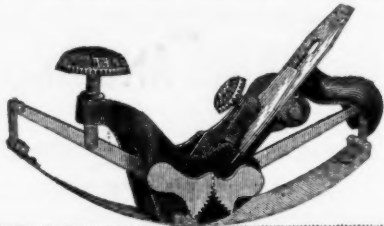
## NAUGATUCK CUTLERY CO.,

Manufacturers of FINE PEN &amp; POCKET CUTLERY.

FULLER BROS., Sole Agents, 89 Chambers and 71 Reade Sts., N. Y.

## STANLEY RULE AND LEVEL CO.,

MANUFACTURERS OF

Improved  
Carpenters'  
Tools.Factories,  
New Britain, Conn.

WAREHOUSES,

29 Chambers St.,  
New York.

## HALL, ELTON &amp; CO.,

Electro Plated Ware, German Silver and Britannia Spoons.



Factories, Wallingford, Conn.

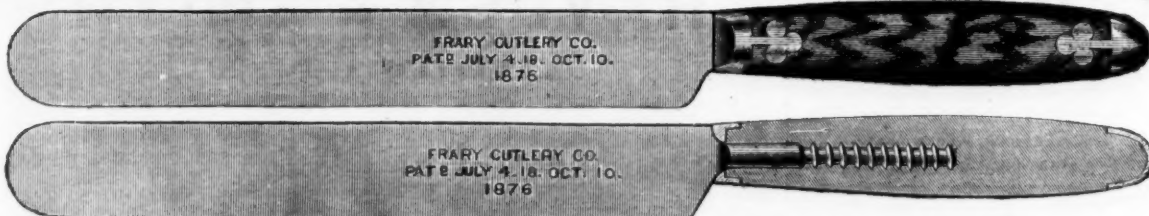
Salesroom, 75 Chambers Street, New York.

## THE FRARY CUTLERY COMPANY,

FACTORY, BRIDGEPORT, CONN.

NEW YORK OFFICE &amp; WAREHOUSE, 41th WIEBUSCH &amp; HILGER HARDWARE CO., 84 Chambers St.

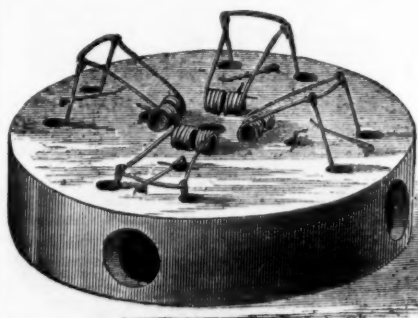
## Manufacturers of all kinds of Table Cutlery.



The above illustrations represent their New Patent Screw Tang Lock Fast Solid Handle Knife.

There is no question but that a solid handle knife is much more preferable than a scale tang. The great objection to their use hitherto is, that no solid wood handle has been placed on the market with the handle properly secured—no handle put on with cement will stand the wear and tear of every day usage. The cement will expand and contract with the action of heat and cold, and become loose, crack and come off, causing great prejudice against their use. This objection is overcome in our patent screw tang. A wood screw is welded to the tang of the knife or fork, and screwed firmly and securely in the handle and locked there by the bolster, making a very strong and handsome knife, which we warrant never to get loose, crack or come off. We manufacture a large variety of patterns, both Table, Butcher and Carvers, and furnish the patent handle nearly as low as the scale tang. We are prepared to furnish this line of goods, together with the scale tang and iron handle, very promptly, and very respectfully invite the attention of the trade.

## CLOTHES WRINGER!

T. J. ALEXANDER, Manager,  
BOSTON, MASS.Self-Adjusting  
Steel Elastic Spring.

## "Common Sense"

## MOUSE TRAPS,

For Home and Export Trade.

BEST IN MARKET.

RIPLEY MFG. CO.

Unionville, Ct., U. S. A.,

Manufacturers of

House Furnishing Hardware.

## Cutlery.

## McCOY &amp; CO.,

SUCCESSORS TO

Van Wart &amp; McCoy,

Importers &amp; Commission

Merchants.

Hardware, Cutlery, Sad-

dlery, Metals, &amp;c.

134 and 136 Duane St., New York.

## Cutlery.

## JOSEPH S. FISHER,

No. 411 Commerce St., PHILADELPHIA

AGENT FOR

George Wostenholm &amp; Son,

"Limited."

Washington Works, SHEFFIELD,

Celebrated I-XL Cutlery, Razors, &amp;c

AGENT FOR

WALTER SPENCER &amp; CO.,

Steel and File Manufacturers,

Rotherham, ENGLAND.

Corporate Mark.

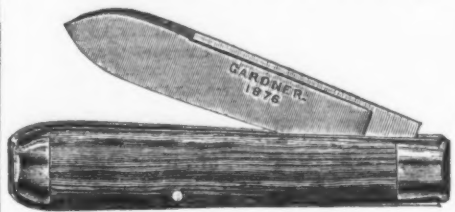
) NO SPENCER  
ROTHERHAM

"Granted 1777"

## HERMANN BOKER &amp; CO.,

101 &amp; 103 Duane Street, New York,

SOLE AGENTS FOR THE

GARDNER PATENT  
POCKET KNIVES

All of Gardner's Patent Knives are fully warranted.

ESTABLISHED 1853.



AARON BURKINSHAW,

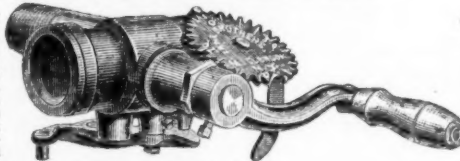
Manufacturer of Pen and Pocket Cutlery, Pepperell, Mass.  
My Blades are forged by hand from the best Cast Steel, and warrant-  
ed. To me was awarded the Gold Medal of the Conn. State Agricultural Society.

## LANE'S MEASURING FAUCET.

Price, \$3.00.

For Light or Heavy Molasses, Oils, Varnishes or other Fluids.

We warrant these Faucets to be as represented, measuring correctly and working more easily in heavy molasses than any measuring faucet in the market. No grocer can afford to be without them, for they save time, and "time is money." They insure perfect cleanliness, requiring no tin measures or funnel to collect dirt and draw files. They do not drip. They prevent all waste, as no molasses or other fluid can pass except when the crank is turned. They are the embodiment of simplicity, and consequently they are always in order. They work easily in the heaviest molasses. They are warranted to measure correctly, according to U. S. Standard.

MANUFACTURED EXCLUSIVELY BY  
LANE BROTHERS, Millbrook, N. Y.

General Agency, GRAHAM &amp; HAINES, 113 Chambers St., New York

CENTENNIAL EXHIBITION PRIZE MEDAL AWARDED.

WARRANTED. A

## CORPORATE MARK,



## Joseph Rodgers &amp; Sons'

(LIMITED)

CELEBRATED CUTLERY,

No. 82 Chambers Street, New York.

F. &amp; W. CLATWORTHY, Agents.

The demand for Joseph Rodgers & Sons' productions having considerably increased, they have, in order to meet it, greatly extended their Manufacturing Premises and Steam power.

To distinguish Articles of Joseph Rodgers &amp; Sons' Manufacture, please to see that they bear

a Corporate Mark.

ESTABLISHED 1852.

## NEW YORK KNIFE CO.

MANUFACTURERS OF SUPERIOR

## Table &amp; Pocket Cutlery,

WARRANTED TO BE MADE OF THE BEST MATERIAL.

WALKILL RIVER WORKS,

Walden, Orange Co., New York.

THOS. J. BRADLEY, President.

## ALFRED H. HILDICK,

12 Warren St., N. Y., Importer of  
Birmingham Heavy Hardware, Chains,  
Anvils, Vises, &c.Agency of HILL BROS. & CO., WALSALL, ENGLAND  
GENERAL HARDWARE MERCHANTS,  
And of

Ball's Pat. Solid Steel Sheep Shears.



These Shears are unsurpassed for cheapness, durability and utility. They are made of one solid piece of steel from point to point, and cannot be broken in use either in the bow or at the junction of back and blade. Samples can be seen at above address, or sample lots furnished. Beware of "THE CROWN" SOLID BOX VISES. A cheap and excellent Vise.

KRAUSS &amp; HAHN,

Importers, Manufacturers and Dealers

In all kinds of

Cutlery and French Grindstones,

152 Centre, cor. Walker St., N. Y.

Ground sides Razors of all brands imported and concealed by steam power for the trade. Price list sent on application.

## Some Facts about Ocean Steam Navigation.

The Boston Journal of Commerce has collected some very valuable facts and figures in regard to the early history of ocean steam navigation.

Ocean steamship service has been wonderfully extended within a few years, but it seems scarcely credible that many of our old-school merchants can remember its inception and early days. Yet the fact is that ocean steam navigation commenced on the 26th of May, 1819, with the departure of the steamship Savannah, Capt. Moses Rogers, from Savannah, Ga., for Liverpool, Eng. She was succeeded by the Commerce, from Hamburg for Charleston, S. C., January 27th, and the Maid of Orleans, also from Hamburg for Charleston, May 3, 1823; the Tebeka, from Rio Janeiro for Calcutta, May 5, 1827; the Curacoa, from Antwerp for Curacoa, August 12, 1823; the Royal William, from Picton, April 1, 1833; the Sirius, from Cork, April 4, the Great Western, from Bristol, April 8, and the Liverpool, from Cork, Nov. 9, 1835; the British Queen, from Portsmouth, July 15, 1839; the Argyle, from Liverpool for New Orleans via Cadiz and Madeira, April 6, 1840; the Unicorn, from Liverpool, May 16, the Chili, from Falmouth, and the Peru, from London for Valparaiso and Callao via Rio Janeiro, July 2, and the Britannia, the pioneer of the Cunard line, from Liverpool, July 4, 1840. One hundred and sixty steamships now ply the Atlantic between Europe and America, and new ones are being added from time to time to meet the increasing demand for the quick transportation of both passengers and freight. Quite a number of additional steamers have this year been put on the regular transatlantic lines at Boston, numerous other steamers are such frequent visitors here as to appear almost permanent, and the immediate future is full of promise in this direction. Cheap ocean steam service has monopolized much of our carrying trade to European ports, and the sailing service to competing points has suffered in consequence.

Captain Irone, of Her Majesty's ship Belcherophon, made the Anglo-American Telegraph Company's steamer Minia haul down its flag the other day. The flag is a Union Jack with a streak of lightning in it, to represent an electric flash. The Union Jack is the exclusive property of Her Majesty, and no merchant vessel has a right to carry it. Whether a streak of lightning through it alters its character and forms a legitimate private flag is one of the questions now raised. The Anglo-American Telegraph Company evidently think that the streak of lightning makes a great difference, for their vessels have for years carried this flag at home and abroad without any objection being raised.

A Victoria dispatch says that the following resolution has been passed by Parliament unanimously: "Resolved, That Chinese shall not be employed upon the public works of the province, and that a clause shall be inserted in the specifications of all contracts awarded by the government to the effect that contractors will not be permitted to employ Chinese labor upon the work, and that in the event of their doing so the government will not be responsible for payment of the contract."

Eighty-two railroad men connected with the freight department of the roads leading from Boston and New York in the East, Cincinnati, Detroit, Cleveland, St. Louis, Chicago, Toledo, St. Paul, and other points in the West, were in convention for two days at Niagara Falls last week. The business was the adjustment of monthly accounts and perfecting the arrangements for carrying into operation the programme agreed upon at the Saratoga conference.

The walls of Morsala, Sicily, have been placarded with an announcement that the 35,000 inhabitants, in view of their inability any longer to bear the burden of taxation placed upon them, wish to sell their city. "They hope," the placard says, "to find buyers who can satisfy the cupidity of the vultures who lay waste the fair regions of Sicily, and that by emigrating en masse to Australia they may escape forever the talons of the harpies."

The coal miners in different sections of Western Pennsylvania are now holding meetings to consider what shall be done with reference to the prices offered for digging. The usual price offered is one and three-fourths cents per bushel, and the convention held in Pittsburgh last week recommended that the men stand out for two and a half cents.

Owing to the great demand for the 4 per cent. bonds of 1907, the Secretary of the Treasury has directed the paper mill at Chester, Pa., which makes the distinctive fiberized paper on which the bonds and notes are printed, to resume operations, which have been suspended for some weeks.

An ice company of Philadelphia shipped from its house last week in Gardiner, Maine, with one crew over 2400 tons of ice, the largest shipment in that length of time ever before made in that section. About 100,000 tons of ice still remain in the Kennebec to be sold.

The preparatory labors of the delegates from American chambers of commerce and the French commission, in furtherance of a treaty of commerce between the United States and France, have commenced.

Gov. Cullom, of Illinois, has been appealed to for a company of militia to protect the coal mines at Stanton, Manacoupin county, which are threatened with destruction by striking miners.

In the Provincial Parliament of Victoria, B. C., on the 3d inst., a bill was introduced to impose a tax of \$60 per annum on every Chinese person in the province.

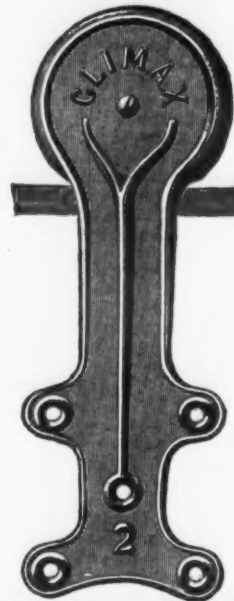
Charles E. Logge, a civil engineer, has seized the plant belonging to the Montreal, Portland and Boston Railway for debt due him.



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Heavy Hardware & Railway Supplies.

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Providence Tool Co., Reading Bolt & Nut Works, Syracuse Bolt Co.,  
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Anti-Friction Sliding Door Sheaves,  
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The "Climax" is recognized as the **Leading Hanger** in the market. It is **altogether superior** to any other Barn Door Hanger ever made. In the "Climax" is a **complete wheel** provided with Anti-Friction Bearings. It is practical, hence its widespread popularity. It is the **only Anti-Friction Hanger having a Wheel**. The trade are cautioned against imitations, made to sell, and which are without any mechanical principles to recommend them.

Moore's Anti-Friction Hay Fork Pulley.

The main wheel contains four anti-friction wheels which revolve upon axles fast in its sides. The main wheel revolves nine times while the anti-friction wheels are revolving once.

Depot for goods of our manufacture:

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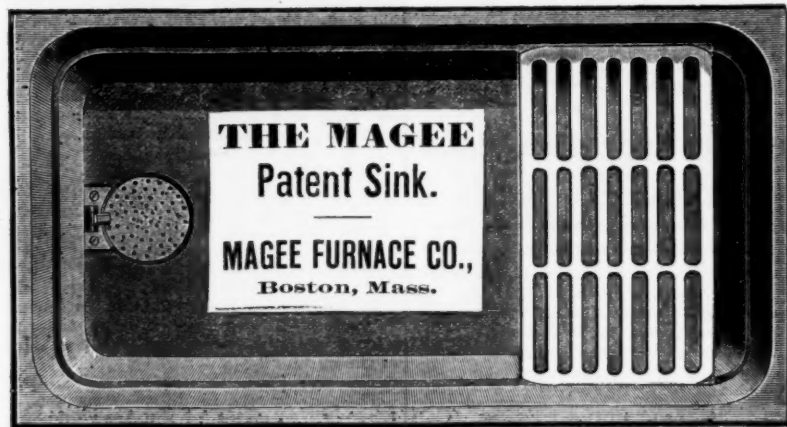
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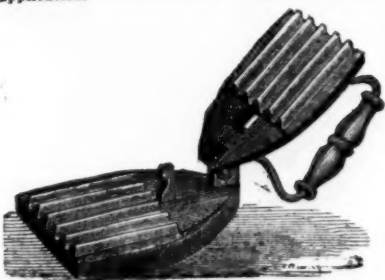


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Sabin's Lever Door Springs,  
**The BOSS and CROWN Door Springs,**  
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**GLOSSING AND FLUTING IRON.**  
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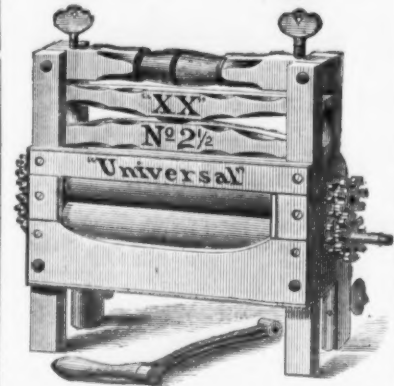
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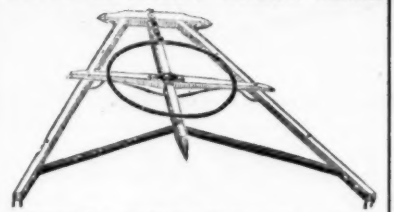
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This Gearing is far ahead of all others in strength and light appearance. It is the strongest and most perfect gear in use, and is meeting with a large sale. Manufacturers of Platform Wagons will use no other after a trial of this.

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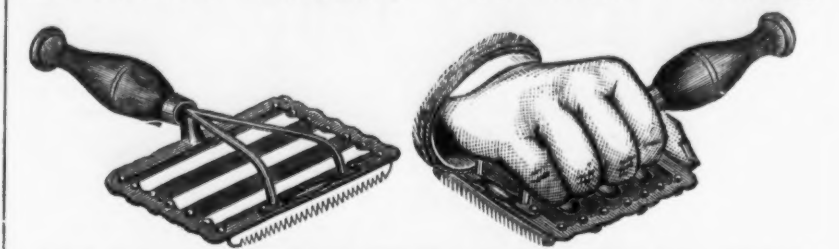
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Heads and points to sample.  
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311 Cherry St., PHILADELPHIA.



# The Iron Age.

AND  
Metallurgical Review.

New York, Thursday, August 8, 1878.

DAVID WILLIAMS, Publisher and Proprietor.  
JAMES C. EAYLES, Editor.  
JOHN S. KING, Business Manager.

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### AUSTRALIAN AGENCY.

The American Hardware Company, Melbourne, are our agents for Australia. Sample copies will be mailed by them, free of charge, to any firm engaged in the trades we represent in Australia, Tasmania and New Zealand.

### CONTENTS.

**First Page.**—Brotherhood's Compound Engine. Martin's Patent Caster. The First Coal Furnace in Pennsylvania. Advance in Freight to the Far West.

**Third Page.**—Steel for Car Axles. A Substitute for Tower Clocks. Condition of the Rural Population in the Rhone Department of France.

**Fifth Page.**—New Patents. Wealth and Science.

**Seventh Page.**—Covering Steam Pipes with Mineral Wool. Cheap Coke for Western New York.

**Ninth Page.**—The Electric Light as Applied to Workshops, &c.

**Eleventh Page.**—Some Facts about Ocean Steam Navigation.

**Fourteenth Page.**—The Congressional Inquiry into the Condition of Labor. Our Foreign Trade. "Spurts" in Manufacturing. Forty-two-Inch Cast Iron Wheels. International Exhibition in New South Wales.

**Fifteenth Page.**—Metallurgical Notes. Criticism of a Consular Report. Scientific and Technical Notes. Packing Goods for Foreign Markets. The Fall Meeting of the Iron and Steel Institute.

**Sixteenth Page.**—Industrial Items. Statistics of the Foreign Iron Trade in 1877.

**Nineteenth Page.**—Statistics of the Foreign Iron Trade in 1877. (Continued). The Paris Exposition.

**Twentieth Page.**—The Paris Exposition. (Continued).

**Twenty-first Page.**—Trade Report. General Hardware.

**Twenty-second Page.**—Hardware. (Continued). Iron. Metals. Old Metals. Paper Stock, &c.

**Twenty-third Page.**—Exports. Imports. Coal. Philadelphia. Pittsburgh. Chattanooga. Boston.

**Twenty-fourth Page.**—Boston. (Continued). Cincinnati. Louisville. Richmond. Baltimore. Foreign. Our English Letter.

**Twenty-fifth Page.**—Colorado as a Place to Settle in.

**Twenty-sixth Page.**—The Iron Age Directory.

**Thirtieth Page.**—New York Wholesale Prices.

**Thirty-first Page.**—New York Wholesale Prices. (Continued).

**Thirty-second Page.**—Philadelphia. Buffalo. Chicago and Pittsburgh Hardware and Metal Prices.

**Thirty-third Page.**—Boston and St. Louis Hardware and Metal Prices.

The views of a Brazilian merchant on packing goods for foreign markets, which we print on another page, will be found of interest and value. The writer recognizes the taste and neatness displayed in packing goods in this country, but thinks we have yet to learn how to put up merchandise so

that it shall reach foreign markets in good condition. Suggestions of this kind are very useful to all classes of exporters.

## The Congressional Inquiry into the Condition of Labor.

The work of Mr. Hewitt's committee, appointed to inquire into the causes of the present depressed condition of the labor market, has not been without good results in showing all who read the reports of its sessions how utterly groundless are the fears now entertained that the Socialists of this country have power for mischief. They are at best a disorganized company of impracticables, mostly ignorant men who have notions of their own about everything in heaven above and in the earth beneath. No two of them think alike on any two subjects, and, as usual with such people, none are willing to concede anything to the opinions of others. In permitting these men and women to come before the committee as volunteer witnesses, Mr. Hewitt has done a good thing. These terrible fellows, the Socialists and Communists, have, in the slang of the day, "given themselves away." As the rule they have come on the stand full of confidence and eager to ventilate their notions of men and things, but a few well-directed questions have so tangled them up in absurdities that they have left the stand confused and crest-fallen. We cannot spare space in which to print any considerable part of the unimportant talk to which the committee have patiently listened, but an abstract of part of the testimony will show its average quality:

The first witness examined was Thomas Rock, who spoke on behalf of the stone masons. The burden of his complaint was that the government gave the work on public buildings in one city to contractors in other places, and added that he thought the government had no right to employ contractors.

Hugh McGregor, a pupil of Justus Schwab, who didn't believe in God, hadn't seen the last census, and appeared to be in a befogged condition generally, spoke as a "citizen." He was questioned closely by Mr. Hewitt as to his aims and desires, but did not seem to know exactly what he wanted.

Cornelius O'Sullivan, a stonecutter, complained that he had been discharged from work on the Albany Post Office for speaking against the government and had been denied a hearing. Mr. Hewitt promised to lay his case before Secretary Sherman.

H. Bartholomew, a worker in Weber's piano factory and a socialist, who wanted to know everybody's business, did not appear to have suffered much from hard times, if the clothing and jewelry on his person might be taken as an indication of his circumstances. He appeared to think that the accumulation of property by manufacturers was a crime, though in his own case, as he was only a workman, it was no doubt a virtue. He said that the government ought to run the trades on the co-operative principle, and thought that machinery might be a great benefit, but at present it was a great curse.

Isaac Bennett, who belonged to the same delegation, was a cigar maker and "the representative of all the working classes," a claim that he could not substantiate, as it turned out that he only partly represented 1400 of them. Depression in trade was, in his opinion, "because there are millions of men out of work, and they are driven out of work by machinery." He wanted to see private capital and machinery abolished and the hours of labor reduced.

Dr. Douai, one of the founders of the Socialistic Labor Party, held very decided views on the rights of labor, and strongly advocated a compulsory 8-hour law. He would have the private books of manufacturers and capitalists inspected, and take care that their profits were duly subordinated to the interests of the workmen. No child under 14 should be allowed to work, and women should be paid as much for their labor as men. In conclusion, he thought New York the "hardest" city in the world.

James Connolly, a painter, who represented himself, was the next witness. He thought the price of money was too high, and that this was the cause of the depression. Mr. Hewitt suggested that he could borrow money at 6 per cent., but the witness, from his own experience, doubted it. He said that contraction and interest-bearing bonds were a direct fraud upon the people, but did not know how much contraction there had been nor exactly what contraction was. He wanted more greenbacks, and at the close of a long, rambling statement, said: "If we can't remedy the affairs of the working people in one way, Kearney will come and, I hope, remedy them in another."

William Hastings, who did not want to disclose his name for fear it would be printed, said he was a capitalist of Brooklyn, and asked if he would be obliged to state the amount of his capital. Upon being assured on this head, he gave his views on bankrupt estates from a capitalist's standpoint. He deprecated the locking up of a bankrupt's money, and promised to further enlighten the committee in a written communication. He appeared again before the committee on Monday with an enormous roll of manuscript which he commenced to read, but was stopped by Mr. Hewitt, who asked him how much gold there was in the country, to which he had referred. He declared the question was absurd, and that he could not answer an impossibility.

Thomas S. Goodwin, who said he was a physician of Staten Island and the author of several works on the labor question, thought that the accumulation of money was improper for a republican country, and was only required in monarchical lands. He would so tax capital as to discourage its accumulation.

W. A. A. Carsey, secretary of the National Greenback and Labor Party, said he was a bricklayer, but, as he could not get work enough at that trade, he was also an editor, but declined to give the name of the paper that retained his valuable services. He wanted to have the government

regulate the use of capital, run all the railroads and telegraphs, and manage all the machinery in the interest of the people. He predicted that, unless Congress should do something for the unemployed workmen next winter, there would be a repetition of the recent railroad riots.

Osborne Ward, who represented the Socialistic Labor Party of Brooklyn, explained the benefits of the co-operative system as contrasted with the competitive system. He attributed the distress among the working classes to the production of machinery, by which one-tenth only of the men are required to do the work. He believed that the poor are worse off, relatively, than they were 50 years ago; that there would be even more production under the co-operative system than under competition.

G. W. Madox spoke on behalf of the Congress of Humanity. He read a letter to the committee containing a scheme for the employment of 100,000 families by means of government aid of money, to be lent them to settle upon government lands. The money, he said, could be printed, and when returned could be destroyed. He gave, as an instance of such an operation by government, the building of a market in the Island of Guernsey, about 100 years ago.

Bruner, a tailor, spoke in favor of man's right to labor, against the capitalistic mode of production, and advocated the referendum.

Patrick Logan spoke in favor of the government sending \$500 each to as many of the 1,500,000 unemployed as need it to go West.

Robert W. Hume, on behalf of the Labor League, spoke against interest on money, the enforcement of bills of credit by legislation, the oppressive employment of women at low wages, and the reduction of the time of labor to four hours a day.

We might extend these quotations through many columns, but it is unnecessary. Most of the witnesses thus far examined seem to have about as clear ideas of the functions of government as the lady who could not see what the government wanted with taxes, and who, when told what purposes they were expended for, replied that she had always supposed such things were paid for out of the Treasury.

The people who have furnished so much entertainment for the committee and the reading public are entitled to their own opinions and have a right to express them. It is a mistake, however, to suppose that they have or can have any influence in national or State politics. No ten of them could agree for a week, and any organization they might form would soon break up into countless fragments, each following the lead of some noisy demagogue who had fallen out with his fellows. How little all the foolish talk of these people affects public opinion is seen in the surprising eagerness with which the 4 per cent. loan is taken, and in the gradual restoration of confidence. We shall always have agitators and social reformers, but it will not be long before the masses of the people will be too busy to listen to them, and too well satisfied with the prospect of returning prosperity to care as much as they are now supposed to do about an equal distribution of the wealth of the nation every Saturday night.

It must not be supposed, however, that Mr. Hewitt proposes to devote the summer to hearing the views of this class of witnesses. When they have had a fair chance to express their views they will be required to give place to others whose opinions the committee desire to hear. In the mean time the committee hope to acquire valuable data from those who are willing to communicate facts by mail, and for the information of those who may wish to help their work Mr. Hewitt has prepared the following circular, which we commend to the favorable consideration of our readers:

The Congressional Committee earnestly request the co-operation of the public in all sections of the country in obtaining information to aid in a practical solution of the important questions submitted to it. They especially invite suggestions from representative men in all departments of business. They propose the following questions to employers of labor throughout the country:

1. What were the selling prices of your products in 1860 and in each subsequent year down to 1878, inclusive?
2. What were the wages paid by you in each of these years for labor employed?
3. Where the persons furnishing information are willing to do so, the committee invite them to state the percentage of profit made by them in each of these years upon the capital employed in their business.
4. What were the wholesale and retail prices of the leading articles of family consumption during each of these years in your vicinity?
5. What is the difference, if any, between the rents of tenements occupied by operatives in the years 1860 and 1878 in your vicinity?
6. What was the comparative amount of the products of your business in quantity and value in the years 1860 and 1878?
7. State the comparative steadiness of employment of operatives between the years 1860 and 1878, inclusive.

The committee invite suggestions from employers and employees as to the extent and causes of the present depression of business, and as to any special Federal legislation which in their opinion would tend to relieve the same. The committee will hold their next session in the New York Post Office on Tuesday, Aug. 20, at 11 o'clock.

We hope this circular will call out replies from all parts of the country. The information thus gathered will be of the greatest statistical value, and will prove a material aid in Congressional legislation on matters affecting the welfare of the masses of the people.

The story of the new silver dollar, popularly known as the "buzzard dollar," in compliance to the English die-sinker who designed the eagle on its reverse side, shows very clearly that people do not always know what they want, even when they are very much in earnest about it. Thus far all the efforts of the Treasury Department to get these coins into circulation have failed. As fast as they are issued to the banks or in payment for bullion purchased, they flow back through payment of customs dues; consequently they continue to accumulate in the

Treasury vaults. So long as Mr. Sherman refrains from paying out these coins as interest on the public debt, this accumulation may be expected to continue. In any event they will flow back as fast as possible. Even in the West, where the clamor for this coin was loudest, it cannot be made to circulate. Western merchants offer to make remittances in silver dollars at a discount if Eastern creditors will receive them, as they cannot use or dispose of them at home. This shows two things: Money is sufficiently abundant for the purposes of trade, and the people do not want silver for anything but small change.

## Our Foreign Trade.

The acting Chief of the Bureau of Statistics gives us a foretaste of the coming report of commerce and navigation for the fiscal year ended with June, in the shape of an abstract of totals, which, as regards the amount of our trade balance, will satisfy all reasonable expectations. The following are the comparisons for 1877 and 1878:

	1878.	1877.
Exports, domestic.....	\$680,683,798	\$694,884,200
Exports, foreign.....	14,200,402	14,200,402
Total.....	\$694,884,200	\$694,884,200
Imports.....	437,051,333	437,051,333
Excess of exp'ts over imp'ts.....	\$257,832,867	\$257,832,867
Exports, domestic.....	\$589,670,224	\$589,670,224
Exports, foreign.....	12,804,996	12,804,996
Total.....	\$602,475,220	\$602,475,220
Imports.....	451,323,126	451,323,126
Excess of exp'ts over imp'ts.....	\$151,152,094	\$151,152,094
GOLD AND SILVER (COIN AND BULLION).		
Exports, domestic.....	\$27,054,985	\$27,054,985
Exports, foreign.....	6,678,240	6,678,240
Total.....	\$33,733,225	\$33,733,225
Imports.....	29,821,313	29,821,313
Excess of exp'ts over imp'ts.....	\$3,911,912	\$3,911,912
Exports, domestic.....	\$43,134,738	\$43,134,738
Exports, foreign.....	13,027,499	13,027,499
Total.....	\$56,162,237	\$56,162,237
Imports.....	40,774,414	40,774,414
Excess of exp'ts over imp'ts.....	\$15,387,823	\$15,387,823
TOTAL MERCHANDISE AND SPECIE.		
Exports, domestic.....	\$707,738,783	\$707,738,783
Exports, foreign.....	20,878,642	20,878,642
Total.....	\$728,617,425	\$728,617,425
Imports.....	466,872,846	466,872,846
Excess of exp'ts over imp'ts.....	\$261,744,579	\$261,744,579
Exports, domestic.....	\$632,804,962	\$632,804,962
Exports, foreign.....	25,834,495	25,834,495
Total.....	\$658,639,457	\$658,639,457
Imports.....	402,097,540	402,097,540
Excess of exp'ts over imp'ts.....	\$256,541,917	\$256,541,917

This is a remarkable showing, and will serve very carefully analysis when the full report is received. The figures for June included in the above were: Exports, \$46,745,286, specie values; imports, \$35,506,287; total, \$82,251,573. The figures of the foreign trade of New York show that its share of this total was over \$49,000,000. It may be safely conceded, therefore, that for the present the commercial supremacy of New York is in much less danger than some writers on this subject would have us believe. For the fiscal year 1877-8 New York's proportion of the whole foreign trade of the country was over 67 per cent. of imports and 47 per cent. of exports. The following table shows the relative importance in foreign trade movements of the ports named, the imports and exports of each port being stated in thousands of dollars:

	Imports.	Exports.	Imports.	Exports.
New York.....	\$292,797	\$338,600	\$292,797	\$338,600
New Orleans.....	10,921	85,590	10,921	85,590
Boston.....	40,300	47,968	40,300	47,968
Philadelphia.....	19,333	44,553	19,333	44,553
Baltimore.....	16,900	45,631	16,900	45,631
San Francisco.....	26,526	21,791	26,526	21,791
Savannah.....	405	18,545	405	18,545
Charleston.....	135	17,728	135	17,728
Galveston.....	1,078	12,249	1,078	12,249
Mobile.....	1,218	9,404	1,218	9,404

This table presents many interesting comparisons which will be noticed without comment from us.

## "Spurts" in Manufacturing.

It is quite usual for newspapers to receive memoranda from manufacturers and agents, giving the figures of remarkable weeks' runs or unusual products in a given number of hours, with requests to make note of them as something worthy of public attention. Such announcements are often paraded as very remarkable evidences of enterprise, skill, excellence of plant, &c., as indeed they may be. Generally, however, they are simply "spurts," which merely show that during a certain time the managers of a certain establishment have manifested an unusual and, as the rule, unprofitable activity. It may be interesting to know that a certain steel works has succeeded in producing more tons of ingots in a week than any other steel works with the same number of converters; that a certain mill has produced in 24 or 36 hours 10 or 20 per cent. more rolled iron than has ever before been rolled on trains of equal size, or that some other phenomenal performance has been accomplished, but the practical value of such feats is doubtful. Generally speaking, they mislead the public and disappoint those who are instrumental in getting up these exhibition runs. From a careful inquiry we are satisfied that they reduce rather than increase the yearly average of a year's production, as they are usually followed by stoppages and attended by a disorganization of the several departments of the establishments in which they occur. Sometimes the product of one department thus driven, such as ingots or muck bar, is greater than the others can work up; sometimes furnaces or machinery which have been overtaxed must be stopped for repairs;

sometimes a break-down terminates the "spurt," and brings the whole establishment to a standstill. In any case the result is, as the rule, a reduced production, which brings down the average and leaves nothing to show for the extra cost of the effort to do something great.

In the light of experience the wisdom of these "spurts" may, we think, be questioned. They are demoralizing in their effects upon masters, men and plant, and are of no value as determining the actual capacity of the latter. It is not what a works can produce in a given number of hours or days, but what it can average in six or twelve months of even, steady working, which is important to those interested. The closest economy is secured when everything moves naturally and normally, and not with a large product this week and no product next. Both men and machines work best when they work uniformly, and "spurts" are fatal to that exact system in industrial management which is always the most successful in the long run. In times like these they are unnecessary as well as undesirable, and if those who seek the brief glory of a phenomenal record for a few hours or a few days will carefully calculate the advantages and disadvantages of a "spurt," we are satisfied they will conclude that such efforts do not pay.

## Forty-two-Inch Cast Iron Wheels.

Some time ago several of our American roads tried the experiment of using 42-inch instead of 33-inch wheels under passenger cars. At that time the mileage of the ordinary wheel was guaranteed by the manufacturer at 50,000 miles, and was probably averaging somewhat higher for the wheels of the best manufacturers. The 42-inch wheels, although admitted to be right in principle, were an untried experiment, and when used were adopted with no little feeling of uncertainty. A number of these wheels, made by one of the leading car-wheel founders in the country, 104 in all, were placed under Pullman cars and have now been some time in service. In reply to a question in regard to the durability of these wheels made by a Western road, the superintendent received a short time since a statement from the Pullman Car Company in regard to their mileage. As yet it appears that none of the wheels have been worn out. The 104 wheels have averaged 91,188 1-9 miles, the greatest mileage of any one of them being rather more than 148,000 miles, and the total mileage of the whole something over 9,000,000 miles. Many of the wheels have run from 120,000 to 130,000 miles, and one set of 12 have run 104,000 miles under a car and are still in good condition. We do not know whether a better showing than this for cast-iron wheels has ever been made; we are inclined to think that it has never been equaled. The advantage of the large size is very apparent, and would be still more so if the relative cost of running 100,000 miles with one wheel or two could be figured up. We should not be in the least surprised if the average life of these wheels when worn out ran up to 150,000 miles. We shall watch their future record with much interest.

## An Engineering Feat.

Last week the Inman steamer *City of Chester*, when about 350 miles from New York, had the misfortune to break her propeller so badly as to utterly disable her. It was found upon examination that the boss was broken in two parts. The question of repair was a very serious one, for the *City of Chester* is, if we remember rightly, the third largest vessel afloat. It happened that the Erie Basin was not available, as the repairs and enlargement have not yet been completed. It was therefore necessary to attempt the use of the largest of the East River sectional docks. The vessel, although something more than 100 feet longer than the dock, was successfully put in position, raised, and the substitution of a new propeller accomplished without any delays or difficulties. This is the largest vessel that has ever been raised on a floating dock in this country, and we have heard it said that the feat has never been equaled abroad. Probably the Bermuda floating dock is large enough for the purpose, but we believe it has not yet been tested by a ship of anything like the size of the *City of Chester*. That the dock was taking a very heavy load was made apparent by the unusual depth at which it floated. The repairs were quickly made, and the vessel was ready for sea on Sunday morning at 10 o'clock, having been on the dock from Wednesday morning till Saturday afternoon.

## International Exhibition in New South Wales.

The Secretary of State has received a note from the British Minister at Washington, dated July 17th, stating that he has been instructed by the Marquis of Salisbury to inform this government that it is proposed to hold an International Exhibition in Sydney, New South Wales, in August, 1879, under the sanction of the government of that colony. A prospectus of the proposed Exhibition accompanies the Minister's note. We have a copy of this prospectus, which is too voluminous for publication, but



which we should be pleased to show to any one who may be interested in the matter.

Mr. Lewis Swift, of Rochester, furnishes an interesting illustration of what a man may accomplish in the field of a science which he loves for its own sake. Mr. Swift is, we believe, a hardware merchant. From all we can learn he has but a modest complement of instruments, and none of those great and costly appliances which are placed at the command of professional astronomers in government observatories and endowed colleges; but he is rapidly gaining a place among the first astronomers of the time, and his name will be known and remembered as long as there is a literature of astronomical science. Mr. Swift has the honor of discovering two comets, and is one of the few who have been able to verify the existence of the inter-mercurial planet Vulcan from personal observation. He and Prof. Watson, making independent observations during the recent eclipse, saw Vulcan at the same moment. Such men do more for science than those who are trained in the schools and follow scientific studies as a profession, and prove the truth of the couplet familiar to the readers of Longfellow:

"For 'tis the heart and not the brain  
That to the highest doth attain."

We print in another column an interesting dispatch from Mr. Peixotto, U. S. Consul at Lyons, on the condition of the peasantry of the Rhone district of France. Mr. Peixotto believes that this district, as indeed all the agricultural provinces of France, offers a market for American agricultural machinery and implements which might be worked with advantage.

A letter from a correspondent in Bremen, elsewhere printed, criticises somewhat sharply the views expressed by Mr. Du Bois, United States commercial agent at Aix-la-Chapelle, in a dispatch to the State Department, printed in our issue of June 13. The question at issue is rather a delicate one for newspaper discussion, and one in which differences of opinion are likely to be reconciled only by the logic of events.

#### Metallurgical Notes.

**PATERA'S PROCESS AT BARANCA, MEXICO.**  
Mr. Weberling gives the following account of the process used at Baranca, Sonora, to the *Mining and Scientific Press*. The ore worked is a fahl-ore, with zinc blende, galena and iron and copper pyrites. The gangue is quartz and the ore averages \$150 silver, with only a trace of gold. It was crushed dry formerly by a 10-stamp battery and now by the Brueckner ore pulverizer. It is then roasted to drive off the sulphur, antimony and arsenic, and to change the silver into a chloride, for which purpose 5% to 7% of salt is added. A Brueckner roasting cylinder is in process of erection, but the roasting is accomplished at present by three reverberating furnaces, with four hearths, arranged in the form of steps. Each of these reverberating furnaces roasts four tons in 24 hours. The roasted and chloridized ore consists essentially of oxide of iron and quartz, chloride of copper and zinc, chloride of lead and chloride of silver, with a trace of gold, which is too small to be worked for. This ore is transferred to the leaching tanks, which are 10 feet in diameter, 3 feet high, and hold 8 to 10 tons of ore. The tanks are then filled with cold water, for the purpose of removing the salts of copper. Some of the chloride of lead is also removed, but not all. The soluble copper and zinc are entirely extracted, and from the solution the copper is precipitated by means of iron. In some reduction works, leaching with hot water is preferred, as it more perfectly removes lead chloride, but the experience at Baranca is that the salts of lead which remain are not injurious, but rather beneficial at a further stage of the operation, as will be seen presently. After all salts soluble in cold water have been removed, the residue consists essentially of the quartz and iron oxide, chloride and sulphate of lead and chloride of silver. A cold dilute solution of hyposulphite of sodium is then poured upon the ore and left until all the silver is in solution. A small amount of chloride of lead goes into solution also. The solution is then run into a tank placed beneath the leaching tank, and a solution of polysulphide of calcium is added until no further precipitate forms. This precipitate, which is essentially sulphide of silver with a little lead, is filtered off and, after drying, roasted in a small reverberatory furnace, until the sulphur is all removed. In this way silver bullion of 650 to 700 fine is produced. This is mixed with lead and litharge and cupelled in a Mexican cupelling furnace to a bullion 998 fine. For this reason the lead which is thrown down with the silver as sulphide is rather beneficial than otherwise, as it assists in the cupelling operation. It will be seen that the addition of calcium polysulphide each time to the mother liquor slowly changes it into hyposulphite of calcium, which seems to work quite as well as the corresponding sodium salt, and as long as the solution is kept in use, constantly regenerates itself by the polysulphide of calcium added.

**PREVENTING A CHILL BY THE USE OF SUPER-HEATED BLAST.**  
Mr. Charles I. Rader, of Easton, Pa., in a letter addressed to the Secretary of the American Iron and Steel Association, gives the following instance where a chill was prevented by the use of superheated blast: The furnace, supplied with Siemens-Cowper-Cochrane stoves, owing to the use of inferior coke was working cold and running heavy black clinker and mottled iron. While in this condition the water supply, in consequence of a sudden and extensive leak in the dam, was becoming beautifully less, and it was only a question of a few hours when it would be entirely stopped. It was estimated that repairs to the dam and the filling again of the same would require 15 days' time.

Every one predicted a thorough chill. But here the stoves came to the rescue. Filling was ordered to be stopped, but blowing was continued as long as the water lasted. This had the desired effect. The increased volume of gas consequent on "blowing down" gave increased temperature to the stoves, and increased the same from 1050° to 1650°, causing the clinker to become white and the iron No. 1 foundry. The furnace was "banked" for 16 days, and on the third day after starting up ran No. 1 foundry. Following is an observation on the stoves' capacity to retain heat when standing idle: Blast off of furnace for 13½ hours; temperature of blast when taken off, 1050°. Temperature of blast on starting up, blowing through the same stove, 650°.

#### BERGSTROM'S BLAST HEATING STOVE.

An interesting model of a blast-heating stove is shown by C. J. Bergstrom, of Finns-hyttan, in the Swedish section of the Paris Exhibition. The heating pipe is of cast iron, oval in section, with internal parallel flanges, forming a continuous spiral. The flame of the burning gas passes up a brick tube inside the coil and passes down between it and the outer case, which is a cylindrical shell of brickwork, with a domed top, the course of the air being in the opposite direction. The casing is made of bricks set in a frame of wrought-iron bars, so that it can be divided into two halves, which, being mounted on wheels running on rails, are easily removable when necessary for cleaning, replacing broken pipes or other repairs.

#### Criticism of a Consular Report.

To the Editor of *The Iron Age*: Allow me to communicate some observations concerning the remarks made by the United States Commercial Agent at Aix-la-Chapelle, in *The Iron Age* of June 13 (page 15).

Mr. Du Bois speaks of doing away with the middlemen or importers, and advises American manufacturers to send commercial travelers over to Germany. Do not all the larger dealers in the United States transact their foreign business through their importers? Would it be profitable for a dealer in the interior of Germany to send his orders direct to the different manufacturers in the United States? The importer is a necessary individual, as he collects the orders and enables the manufacturers to fill them.

Mr. Du Bois is probably not aware of the large competition there is already. In Hamburg and Bremen there are about ten or twelve firms who handle mainly American goods. Mr. Du Bois says they are making enormous gains and charge exorbitant prices, and "reap the lion's share;" but he is sadly mistaken when he sees such large gains in the business transactions with Germany. In Berlin, Leipzig, Dresden, Mainz, and in fact in all the larger cities, are firms who are in direct correspondence with New York houses. The competitions have taken such large dimensions that the already established houses have to be on the lookout to make only a very reasonable profit, without receiving anything of "the lion's share."

Allow me to mention that I have given you my personal experience above. Having traveled for the last 20 years in the United States, I see no more sign of fishing the million here than I ever did there.

Very respectfully, E. ELBERS.  
BREMEN, July 10, 1878.

#### Scientific and Technical Notes.

In a paper read before the New York Academy of Sciences, J. C. Russell calls attention to

##### INDURATED BITUMEN

found in the eruptive rocks of New Jersey. He found that cavities of amygdaloid trap near Plainfield are filled with a brilliant jet-black carbonaceous mineral, resembling very closely the albertite of New Brunswick. Similar deposits of bitumen were described by Percival in his report on the geology of Connecticut.

In a letter to the Editors of the *American Journal of Science and Arts*, the discovery of

##### A NEW PLANET

is announced by Prof. C. H. F. Peters, of the Litchfield Observatory, Clinton N. Y. It is of the 12th or 13th magnitude.

The *Deutsche Indust. Zeitg.* gives a method for

##### SILVERING OBJECTS BY IMMERSION.

invented by Boettger. The objects to be silvered, after being thoroughly cleaned, are suspended for about 10 minutes in a bath made as follows: A fine powder of tartrate of silver is kept in suspension in distilled water, and ammonia is added until almost all of the tartrate is dissolved, and the liquid shows no odor of ammonia.

Mr. E. Fabrig, of Southampton, gives the following method for

##### BRIGHTENING SMALL IRON ARTICLES.

Clean the articles to be brightened in a hot solution of half to a gallon of commercial potash for a quarter of an hour; then wash in a solution of 1 to 20 sulphuric acid half an hour, and dip in a bath of nitrous acid; wash in cold water and dry in sawdust—warm sawdust is best. The articles so treated come out beautifully, and retain their brightness for a long time.

A hardware manufacturer of Vienna has recently submitted to the technical committee of the Austrian army a

##### BRONZE CARBINE.

The calibre, length, system of rifling, and pattern generally of the new weapon are exactly similar to those of the Werndl carbine; the only difference between the two being in the metal of which the barrel is constructed. Compared with the steel, it is claimed for the bronze barrel that it possesses greater elasticity and toughness, with equal hardness; that it is more durable, the grooving being less rapidly deteriorated by the passage of the bullet; that it is much easier to keep clean, and that, as the metal does not rust, it is not liable to become injured by neglect; and, finally, that while costing originally no more than the steel, the bronze barrel is always worth, as old metal, 50 per cent. of its first cost. Previous to the weapon being laid before the committee

300 rounds had, according to the statement of the inventor, been fired from it; but no deterioration of the bore could be discerned. Five hundred more rounds were afterward fired from the carbine, by order of the committee, in rapid succession, the cases of some of the cartridges being purposely torn before they were used, and the barrel being cleaned after every 25 rounds. At the conclusion of this trial the carbine shot as accurately as at the beginning, and the interior of the bore was found on examination to be practically uninjured, and in as good condition as ever. The inventor of the special bronze used, which is a mixture of pure copper and tin chemically cleaned from all oxides by means of phosphorus, has taken out a patent for his employment in the manufacture of all fire-arms.

Francis E. Meyer and Frederick Schultz, of this city, have invented a new gun which they call a

##### RIFLE BATTERY.

which is so constructed as to deliver its fire either in a right line or in horizontal, radiating lines. The barrels, ranging in number from six to twenty, are sufficiently far apart to prevent heating from continuous firing, and are fired successively, instead of simultaneously, at the rate of 20,000 shots an hour. A steel cover in front of the gunners protects them from the enemy's fire. These guns may be fired continuously in one fixed direction, or from side to side, or the battery may be made to vibrate laterally of itself, at the discharge of each gun, thus sweeping the field in front. The battery may be divided into the barrels and the breech-block or machinery by which the barrels are loaded and discharged, the whole resting on a turn-table or pivot. The balls are placed in a cartridge receiver at right angles to and resting on the blocks. At the right of this is a crank, at the left a lever. By pressing the lever in a given direction the block is forced up to the muzzle of the gun, when an automatic loader called the "fingers" takes hold of the cartridges and withdraws them from the receiver. Another turn of the lever and the balls are forced into the muzzles and the battery is loaded. Then the crank at the right is turned, and at every revolution a needle is thrust forward and strikes a cartridge with sufficient force to explode it. Again the lever on the left is turned, and the "fingers" advance and withdraw the spent cartridges, and the battery is again ready to be loaded.

A trial was recently made on the Minneapolis and St. Louis Railroad with a

##### SAFETY CAR RUNNER.

The runner consists of a bar of iron ¼ inch thick, suspended from the truck outside of and underneath the oil boxes, and secured across the ends of the truck by the brake-beams. It is braced between the wheels, and so constructed as to completely encircle and bind the truck. The runner hangs about four inches out from the wheels on either side, and about one-half inch above the tread of the wheel. It is claimed that it will hold the car to the track under any and all circumstances, and the following trials seem to sustain the claim. The scene of the trials was in a sharp curve (6 degrees). An outside rail, 30 ft. in length, was removed, and the car, an empty flat, was sent over the gap at the rate of 15 miles an hour. The runner did its work beautifully; the trucks dropped on the ties, but were held close to the rail, and the car stopped in a distance of 30 ft. On the second trial the car was sent over the gap at the rate of 25 miles an hour, and ran about 150 ft., the runner holding it close to the rail, as before, and in each instance the car was replaced upon the track, uninjured, in less than 30 seconds!

Prof. Edison has also constructed a new

##### CARBON RHEOSTAT

on the same principle as his telephone. The instrument consists of a hollow vulcanite cylinder screwed on a boss attached to a brass plate. Upon the boss, within the vulcanite cylinder, are placed a varying number of disks of silk saturated with sizing well filled with plumbago and dried. Upon this column of disks a plate is laid which has a conical cavity in its upper surface. A pointed screw working in a cap over the vulcanite cylinder acts upon the cavity of the plate, thus compressing the silk disks. In order to measure the degree of compression thus effected the screw is provided with a disk having a knife-edge periphery which extends to a vertical scale. In this instrument, says the *Scientific American*, the resistance may be varied from 400 to 6000 ohms. It possesses the advantage over the ordinary rheostat of effecting a considerable saving of time.

Mr. R. Catanach Smith, of Edinburgh, has devised a new system of

##### LOADING HEAVY GUNS

with the aid of compressed air. The rammer consists of a case containing a series of tubes, sliding one within the other, after the manner of the tubes of a telescope. Air under pressure is admitted to the rearmost tube of the rammer, which is thus forced from the rammer case into the bore of the gun, carrying the other tubes with it. When this has been effected by a simple arrangement of ports, communication for the rear-most tube to the second and so on is obtained until all the tubes are extended. On the complete extension of the rammer communication is established between the rear-most tube and a series of internal telescopic tubes, which have been extended along with the others, and through which while charging the air escapes from the bore of the gun. Through this communication the compressed air passes from the first tubes to the front end of the apparatus, and by its pressure all the tubes are collapsed until they are again inclosed in their casing and are ready to be removed. Both sponging and ramming are effected by this method and require only a few seconds.

Bjorkmann of Stockholm, Sweden, gives the following recipe for the manufacture of the new explosive,

##### VIGORITE.

Mix in a wooden or rubber vessel 5 to 20 parts of sugar or molasses, 25 to 30 parts of nitric acid, and 50 to 75 parts of sulphuric acid. Twenty-five to 50 parts of this mixture, called nitroline, are mixed with 15 to 35 parts of nitrate of potash and 15 to 35 parts of cellulose.

The *Berichte d. Deutsch. Chem. Gesellschaft* contains an account of a

##### NEW INDICATOR IN ALKALIMETRY

proposed by W. Von Miller. Tropæoline, a commercial color made in England, in an aqueous solution changes from a yellow to a crimson red upon the addition of all the mineral acids, and even with certain organic acids. As tropæoline is not affected either by acid carbonates or free carbonic acid, alkaline carbonates can be titrated without the aid of heat. It is not affected by metallic salts, and therefore possesses important points of advantage when compared with litmus.

##### Packing Goods for Foreign Markets.

A Brazilian correspondent of the *New York Evening Post* sends the following letter from Rio de Janeiro:

Not long ago I was present at the opening of two boxes of apple jelly, which had been shipped to this city from Baltimore, and as I saw in this one simple incident a very cogent reason why Americans have not made greater headway in their foreign trade, I propose to make it the text for this letter. The two boxes in question contained one dozen glass jars of apple jelly each, and had the appearance of having been put up with the special purpose of attracting purchasers and prejudicing them in favor of this particular brand. The jars were of a tasty pattern, with ornamental tops, and were suitable for use on the table without any further preparation than cleaning their exteriors; in fact so much stress seemed to have been placed upon their seductive appearance that they were not only securely packed in sawdust to protect them from abrasion and breakage, but their tops were carefully wrapped in paper and packed by themselves. Unfortunately this praiseworthy care seems to have stopped short just here. Over the tops of the jars two or three thicknesses of brown paper were drawn which were secured to the sides with twine, and in this condition the goods were sent out to seek a foreign market over an ocean path of not less than 5000 miles. Of course the boxes were duly marked "This side up with care"—an inscription which is as intelligible to the Brazilian porter as though it were so much Choctaw. After a detention of a month or two in the custom house and storage in a commission house for a month or two more, these two boxes were finally sold. On opening them it was found that some of the jelly had escaped through its paper covering, which was thoroughly saturated, and the rest was rancid and infested with vermin to a depth of fully 1½ inch in each jar. Below this the jelly was uninjured and still retained its flavor, but there was a uniform loss on each jar of fully one-fourth of its contents—not taking into account the natural impulse of many buyers to throw away the entire lot at first sight of its disgusting condition.

These trifling incidents, unimportant in themselves though they may be, and not applicable to every shipper of American productions to foreign markets, are yet so universal and so suggestive of the many little things which we have either overlooked or underestimated, that more practical benefit and useful information can be obtained from their study than from all the columns of statistics and all the complex and comprehensive schemes for the exhibition and introduction of American wares into foreign countries that have yet been published. It is not the opportunity for advertising ourselves, nor for placing our goods on exhibition with the patriotic inscription "American" attached to them, that we stand in greatest need of, it is simply an accurate knowledge of details—the "what is wanted," the "how to make it," and the "how to place it on the market." When we have succeeded in making the best, the most suitable and the cheapest article in a certain line of trade, and have conformed ourselves to those natural laws of exchange upon which all healthy commerce must be based, we shall probably be not a little surprised to find the market quite at our command.

That there was one grave defect in the transaction named is plainly evident—a defect that is common in the greater part of the shipments of merchandise to this country, and which is one of the causes that are operating against the growth of our foreign trade. However excellent the quality, low the price and prompt the delivery of our goods, they can all be completely counterbalanced by this practice of ignorant or careless packing; it fully justifies the oft-repeated charge, "You Americans, as a nation, are yet ignorant of the simplest rudiments of conducting a foreign trade!" It may be safely asserted that no purchaser of these paper-covered jars of apple jelly will venture upon a second purchase of that particular brand, and it is quite as certain that every purchaser of it, not an American, will hereafter shun all American goods of that class on the supposition that this method of packing is common to them all. There can be no excuse for packing such goods in this manner even for a home market, as there can never be any certainty that a package will be carefully handled, that it will always be placed with the right side up, and that it will be consumed quickly. When, therefore, the goods are destined for a foreign market, with weeks of ocean travel before them, where the heating and sweating of the cargo, together with the ever-changing position of the vessel, are sure to test the packing to the fullest extent, and with weeks, often months, of storage in foreign custom houses and warehouses where our customary shipping directions and cautions are of no avail, and the boxes are pitched about with slight regard to either top and bottom or contents, this loose system of packing becomes not only totally inexcusable but decidedly culpable. The vessel on which I came to Brazil brought a large consignment of lard, which was packed in the ordinary tin lard pails with loose tin covers. During the voyage the lard melted and ran out beneath the covers whenever the vessel heeled over, and by the time we arrived at this port there was not only a considerable loss in the lard, but also great injury had been done to other parts of the cargo, for which damages were claimed from the shippers. Even in the case of certain classes of hardware where we might expect the minimum of damage in

shipment, the loose paper about the articles in the boxes often affords so slight a protection that the goods are rendered quite unsalable by rust before they can be despatched through the custom house and unpacked.

Columns of instances might be given to prove that this defect is common in nearly all branches of our trade with this country, and that it is the cause of no small part of the existing prejudice against us. Enough has been said, however, to indicate where the difficulty lies, and as it is one of our own creation, it can easily be removed.

In general terms, all goods destined for a foreign market should be strongly and securely packed. The greatest care should be given even to the pettiest details. In England this is so important a matter that it is a business by itself, and, as a consequence, the work is so thoroughly done that claims for damages and complaints about poor packing are rarely known. If possible, every case should be packed so that it may be stored away in any position without injury to the contents, and it should be carefully protected against heat, against dampness and against the action of salt water. With dry goods and all commodities liable to injury from dampness, oiled paper or cloth, with abundant wrappings of common paper, should always be used, together with such further protection as the character and quality of the goods may require. In the shipment of the cheap grades of cotton goods from England, oiled cloth, several thicknesses of heavy paper, tarpaulin and an outer covering of canvass are employed, while the higher grades of all English and French goods are further protected by well-made packing boxes, lined with tin or zinc. Even in the cheaper grades packing boxes are often used. In the preparation of canned fruits, jellies, jams, &c., the best of tinware should be used and every precaution taken against the action of salt water, which quickly rusts through the cans and spoils their contents. Glass should be employed as little as possible, because of its liability to breakage and the risk to the keeping qualities of the goods through imperfect sealing. In the packing of bright goods, such as axes, saws, cutlery, &c., everything should be carefully wrapped to protect them from the excessive dampness of this climate. With packing boxes the tin or zinc lining should always be used when the character and quality of the goods will allow, not only for the reasons above given, but also as a protection against the ravages of the "cupin" (white ant), a little insect which has the capacity of doing more damage in proportion to its size, and in a quiet, unobtrusive way, than any other within my knowledge.

**The Fall Meeting of the Iron and Steel Institute.**—The approaching fall meeting of the Iron and Steel Institute of Great Britain, according to an outline programme furnished to its members, to begin on the 16th of September and last until the 20th. Three general meetings are to be held, and two days have been reserved for excursions to iron works. The annual dinner of the Institute will be on the 17th. The list of the papers already submitted to the council by a number of eminent metallurgists give promise that the interest of the meeting will not be confined to the members present, but will extend to all who closely follow the progress of the iron industries. The president, Dr. Siemens, will deliver an introductory address, and the following topics will be presented and discussed: The Iron Ore Resources of France, by Professor Jordan of Paris; the Present State of the Iron and Steel Manufacture, as judged from the Paris Exhibition, by Professor Akerman; Homogeneous Steel, by Mr. Eaverte, of Terrenoire; the New Ponsard Gas Furnace, by J. S. Perissé; the Mechanical Properties of Soft Steel, by Daniel Adamson, of Manchester. These communications promise to make the meeting unusually important, and *The Iron Age*, in continuance of its efforts at former gatherings of the Institute, will endeavor promptly to place a full account of the proceedings before its readers.

The boiler of the tug-boat *Summer*, lying at the dock at Baltic street, Brooklyn, N. Y., exploded early on Sunday morning last, blowing the boat to pieces. Two men, the fireman and cook, who were aboard at the time and asleep, suddenly found themselves in the river; they were rescued, and with the exception of some slight scalds were uninjured. The fireman could not tell how the explosion happened, as he thought the fire had been sufficiently banked to prevent generation of steam.

Reese, Graff & Woods, of Pittsburgh, Pa., steel manufacturers, filed a petition in bankruptcy on the 4th inst. Their liabilities are \$1,171,995; assets, consisting of real estate, stock of steel and outstanding accounts, \$600,000. Of the liabilities \$602,643 are secured and the balance unsecured. Nearly all of the firm's paper is held at home.

At Jefford's ax factory, Jamestown, N. Y., on the 2d inst., a grindstone weighing 4000 pounds burst, a piece weighing over 1500 pounds striking an employee named Wieher in the breast and face. Wieher has been unconscious since the accident and will probably die.

The Supreme Court of Ohio has decided that no county or township or city in that State can build a part of a railroad. A municipality can only build a whole road, as a public work. It cannot become part builder or part owner.

At Enterprise, W. Va., on Aug. 4 a saw-mill boiler blew up, killing four men, and fatally wounding four others. The building was destroyed, involving a loss which is estimated at \$8000, with no insurance.

Louisville complains of a 12 cent discrimination on the higher classes of freight from the East, and of a discrimination against that city in favor of Cincinnati by the fast freight lines.

The miners of Tuscarawas Coal Company, at Ulrichsville, Ohio, struck on the 1st inst., against the reduction of their wages from 76 cents per ton.



# AMERICAN SCREW CO.,

Providence, R. I.,

**MANUFACTURERS OF MORE THAN 4000 VARIETIES OF PRODUCT,  
AND INCREASING THE ASSORTMENT DAILY.**

Machinery employed contains important inventions recently patented, and which are designed to produce Screws at a **lower cost to the consumer** than has ever been attained.

All goods are distributed through the Hardware trade, to whom a liberal discount will be allowed.

## INTERNATIONAL EXHIBITION. PHILADELPHIA, 1876.

(No. 235.)

The United States Centennial Commission has examined the report of the Judges, and accepted the following reasons, and decreed an award in conformity therewith.

PHILADELPHIA, November 8, 1876.

### REPORT ON AWARDS.

Product: **Iron, Brass and Steel Screws, Tire and Stove Bolts, Rivets.**

Name and address of Exhibitor: American Screw Company, Providence, R. I.

The undersigned having examined the product herein described, respectfully recommends the same to the United States Centennial Commission for Award, for the following reasons, viz: **Being of a quality nearly approaching perfection, showing the highest attainment in this branch of manufacture.**

G. L. REED, Signature of the Judge.

Approval of Group Judges.

Daniel Steinmetz,  
Jas. Bain,  
Chas. Staples,

G. L. Reed,  
J. D. Imboden,

J. D. Imboden,  
Dav. McHardy.

A true copy of the record. Given by authority of the United States Centennial Commission.

[L.S.] J. L. CAMPBELL, Secretary.

FRANCIS A. WALKER, Chief of the Bureau of Awards.  
A. T. GOSHORN, Director-General.  
J. R. HAWLEY, President.



After forty years' experience we offer to the trade our Centennial Screws, patented May 30, 1876, as the best we have ever known.

The method of manufacturing is also patented, and we are changing our machinery as fast as possible, to manufacture the improved article only. To introduce them, they will be sold at the same price as the old style screw.

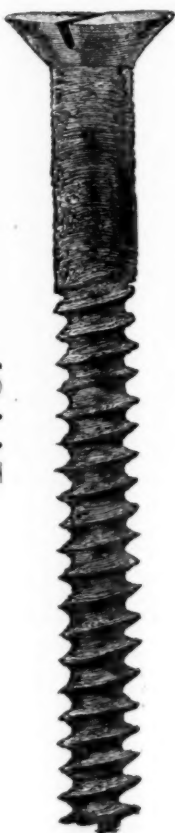
The new screws will be packed in manila colored boxes with the new label covering end of box, and enlarged figures showing plainly contents.

To distinguish this screw we have adopted a trade-mark, which is also secured to us.

The accompanying engravings show the progress of making screw from the old blunt point to style now adopted.

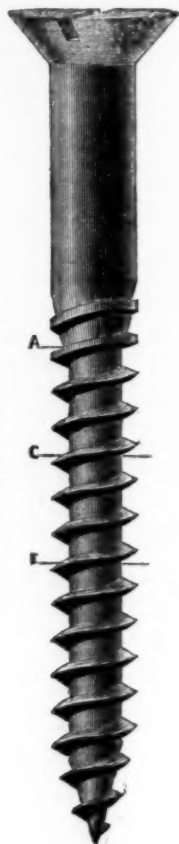
Experience has shown that the weak point of screws, as formerly made, is at the heel of the thread, where all

1776.



1846.

Patented August 30.



Section at Line A B

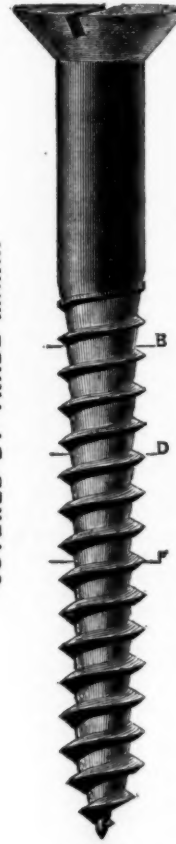
Section at Line C D

Section at Line E F

1876.

Patented May 30.

COVERED BY TRADE MARK.



Section at Line A B

Section at Line C D

Section at Line E F

Estimated to be FIFTY PER CENT. stronger than a Screw as Commonly made.

the strains of forcing the screw into the wood naturally concentrate.

To avoid the sharp angle existing in the old style of screws has been the aim of all manufacturers, but every expedient hitherto adopted has proved as objectionable as the evil complained of.

It will be seen in our new screw that not only is the sharp angle avoided, but the strength very much increased, as illustrated. See sections at lines.

### CLAIM.

"A Pointed Wood Screw having the outer periphery of the thread upon its body cylindrical, while a portion of the body below the thread and near the neck is conical, the remainder of the body to the point being cylindrical, and yet having all the thread brought to an edge of a constant angle, without jogs in the paths between the threads, substantially as described."

On the opposite page will be found illustrations of the various Works of the company.



**SPECIAL ANNOUNCEMENT TO THE HARDWARE TRADE.**

---

**THE**

**AMERICAN SCREW CO.**

**WILL MAKE A**

**PEREMPTORY SALE**

**OF**

**HALF A MILLION GROSS**

**Of their Best Quality**

**Patent Gimlet Pointed Flat Head Iron Wood Screws,**

**THROUGH**

**Messrs. BISSELL & WELLES, Auctioneers,**

**AT THEIR SALESROOM,**

**83 Chambers and 65 Reade Streets, - NEW YORK,**

**On Wednesday, August 21, at 10 o'clock a. m.**

---

The goods will be offered in lots to suit all classes of buyers, but assortments sold will be required to be in the usual proportion of sizes, unless otherwise agreed.

Parties unable to attend can make up their orders and forward to the auctioneers or their own correspondents to purchase for them.

All goods will be delivered F. O. B. at Providence, and through Bills of Lading obtained when desired. Terms, cash in 30 days from date of sale for approved credit.

To parties who take less than a full case of a size, an extra charge of  $2\frac{1}{2}$  per cent. will be made on the amount repacked.



## INDUSTRIAL ITEMS.

## MAINE.

The Rolling Mills Company, Cape Elizabeth, have added machinery to their works for manufacturing railroad spikes. They have filled several orders since early spring for rails for the Boston and Maine and Maine Central railroads.

The Dunn Edge Tool Company, West Waterville, have manufactured this season 15,000 dozen scythes, all of which are sold. This is the largest season's work since the works have been in operation, 39 years.

A party of Russian officers recently visited the Evans rifle shops at Mechanics Falls. One of the party asked to go to the store-room of completed parts. Selecting at random the several parts he sent for a workman. Mr. Evans sent a man from his force, who, in the presence of the officers, got up the gun and was firing cartridges within 17 minutes.

## NEW HAMPSHIRE.

The Nashua Lock Company's works have started up after having been idle a few weeks.

## VERMONT.

The Steam Stone Cutter Company, of Rutland, have furnished eight of their machines to F. S. Gross of Lee, Mass., who has the contract for furnishing the marble for the city buildings of Philadelphia. They have recently shipped one of their machines to the Middlesex quarry in Connecticut.

## MASSACHUSETTS.

The J. C. Hoadley Engine Co., at Lawrence, had an auction sale of all their effects a few days ago.

A recent trial of the Lowell battery gun, invented by D. W. C. Farrington of Lowell, and manufactured by the Ames Company, Chicopee, showed up its merits in decidedly good style, the gun being discharged 60 times in less than 10 seconds and hitting accurately a bull's-eye at 600 yards' distance. The company are manufacturing a large number of these guns, and it is thought that they will soon secure a rapid and steady sale for them.—*Vox Populi.*

The Wason Manufacturing Company have not had so many orders for passenger cars on hand since they moved to Brightwood as they have this summer, and only in the winter of 1875 when at work on their centennial cars have they been so busy.

The Waltham Watch Factory has resumed operations.

The extensive brass-works manufactory of the late firm of Hayden, Gere & Co., at Haydensville, has been purchased by Gillis, Morison & Co., of Boston, who will continue the business of their predecessors in the manufacture of all kinds of brasswork for plumbers, steam and gas fitters' supplies, steam engine and boiler builders' materials, and general brass foundry and finishing work. After the destruction of the old works by the Mill River flood of 1873, it was determined to construct new and larger buildings, adequate to the constantly increasing demands of the business. The new buildings, constructed of brick, stone faced, are 600 x 50 feet, four stories high, with a capacity for 600 workmen, and constructed at a cost of \$300,000, are the largest of their kind in the world, while the productions of their new machinery are to be found in every city of America and Europe. The works are operated by water power, and connected by a railroad of their own with the New Haven and Northampton Railroad, affording equally quick freight communications with New York or Boston. It is understood that the new proprietors contemplate transferring at once the property and business to a corporation to be called "The Hayden Company," and that Mr. Joel Hayden, who for the past 20 years has been the resident partner at the factory, will superintend the manufacturing department. The company are already running full on orders, and have reopened the old warehouses of Hayden, Gere & Co. at 110 Oliver and 19 Union st., Boston, and 84 Beekman street, New York.

## MASSACHUSETTS.

The Wicks Manufacturing Company, Worcester, are putting machinery into the Ethan Allen shops, at the Junction, recently occupied by Forehand & Wadsworth, and will manufacture cotton warps. They will also continue their works at the mill at South Worcester.

The Hinkley Locomotive Works, Boston, which have just started up, have orders for one locomotive a week for the next three months, and have just added a hundred hands to their working force.

## RHODE ISLAND.

The contract for arms for Turkey will keep the Providence Tool Company at work for some time yet. When this is completed it is thought that there will be other work enough on hand to keep most of the men employed. Sewing machines of two new patterns are now being made.

The old-established manufactory of bobbin spools belonging to Moses Potter & Sons, in South Scituate, has been destroyed by fire. When the fire was discovered it was under such headway that nothing could be done to save it, and the entire stock and tools were consumed with it. The building was of wood, 44x24 feet, with an ell for the engine. How the fire originated is not known. The loss is estimated at \$7,000, on which there was no insurance. The factory had been in operation for 31 years, and was doing a good business at the time of the disaster.

## CONNECTICUT.

Since Mr. Stockwell's failure the Howe Machine Co., of Bridgeport, have been under the management of Col. Garrison of New York. The company have taken a new departure in the way of curtailing unnecessary expenses and re-establishing their credit. They have nearly 500 hands employed, and there are excellent prospects of an extensive fall trade.

The Faust Steel Company's mill at Windsor Locks is still idle on account of no orders.

The Pacific Iron Works, Bridgeport, are getting the large engine recently belonging to the New Haven Rubber Company into running order again. The engine is a Corliss cut-off, of about 300 horse-power. The

boilers for the Turkish government, which were made and paid for some months since, still remain at the works.

The Hon. Henry C. Robinson and Mr. William A. Healy have been elected on the board of directors of the Pratt & Whitney company of Hartford, in place of two members of the old board who have retired. Two other directors are to be chosen hereafter, making quite a change in the board of management. Mr. William A. Healy has been elected treasurer in place of Mr. E. F. Blodgett, but the latter retains the secretaryship of the company.

The Higginum Manufacturing Company have recently shipped a supply of trucks to equip a railroad in Russia.

The Weed Sewing Machine Company, Hartford, are running on full time, with about 125 hands.

## NEW YORK.

Work was resumed in nearly all of the departments of the Rensselaer rail mill on Tuesday, the 30th ult., giving employment to about 400 persons.

The following cable message was received on Wednesday of last week at the manufactory of the Walter A. Wood mowing machines, at Hoosick Falls: "Wood secured first prize, and the McCormick second, at the great three days' trial of binders in Middleburg, Holland, ending to-day."

## "WALTER A. WOOD."

Messrs. Gilbert, Bush & Co., of Green Island, shipped 20 cars to the Metropolitan Elevated Railway Company last Monday.

## PENNSYLVANIA.

John Hetrich, who rented the machine shops and foundry in Bernville, formerly operated by Haag, Kline & Co., has started up the establishment, giving employment to a number of hands. Work is being pushed ahead vigorously. The shops had been idle for several years.

Dr. Robert Walter, the proprietor of the Mountain Home Park, at Wernersville, proposes erecting a monument upon the site of the first furnace built in Pennsylvania, which is on his property. It will be suitably inscribed and unveiled with appropriate ceremonies.

Messrs. F. & G. Brooke, of Birdsboro, have commenced the construction of a dam across the Schuylkill, near the W. & N. R. R. bridge, in order to supply furnace No. 3 with water.

The iron works at Scranton are working about three-quarters time.

The Susquehanna Coal Company, at Nanticoke, are putting in an apparatus for burning common culm from the screens, which will save the company between \$30,000 and \$40,000 per year.

It is said that the Scottsdale Iron Works, which have been idle for a long time, will soon resume operations.

The Sharon Herald says: The shipments of pig iron from the Valley furnaces of that place are greatly in excess of the production. The stock of pig iron in the Mahoning Valley is lighter than it has been for a number of years.

A Boston (Mass.) party visited the West Hamburg Iron Works for the purpose of inspecting the machinery and ascertaining its capacity. These works are in excellent condition, the last proprietor having made extensive improvements.

Mr. P. L. Weimer recently contracted with a party of capitalists of New York, acting under the name of the New Jersey Iron Spiegel Company, for the erection of a large anthracite furnace at Chester, New Jersey. Work will begin on the furnace at Mr. Weimer's works immediately, and it is to be completed in five months.

The hands of the Kensington iron mills in Philadelphia, comprising the employees of the Stephen Robins & Sons' Works, the Fairhill Works, Marshall, Brother & Co., the Philadelphia Steel and Iron Company, the Delaware Iron Works, and the Kensington Iron and Steel works, seem resolved to resist the reduction of ten per cent. in wages. By the new schedule the puddler, who was before receiving \$4 per ton, will receive \$3 and 60 cents, but out of this he must pay his helper \$1 and 20 cents, and, in addition to that, 25 cents that the owner of the mill always heretofore paid the helper must come from the pocket of the puddler, and after all this, his wages will be \$2.15 per day. The 25 cents additional was paid by the owners when the times were better, as the helpers complained that they were not receiving sufficient. The heater, who by the old schedule received 67 cents per ton, will receive by the new 55 cents, and, after paying his helper, will receive \$1.68 as his day's wages, provided, however, that he gets out 6 tons a day, and this is not considered an extra effort. The rollers, roughers and others will be similarly reduced. The mill owners, however, do not think that there will be a strike.

The Pottstown Iron Co.'s nail factory is so pushed with orders that a proposition is on foot to work 11 hours a day. A very large order was received several days ago from Charleston, S. C.

The Crowther Iron Co., of New Castle, filed a petition in bankruptcy last Saturday. The liabilities are placed at \$160,000 and the assets at \$165,000. The property consists of a furnace valued at \$125,000 and some real estate. The works employed 40 men, and shut down on the 1st of July, paying all the employees their wages. Among the Pittsburgh creditors are H. E. Collins & Co., \$1455; J. & J. M. Porter, \$504.32; John Dravo, \$780.44; Nimick & Co., \$48,827.67; Duquesne National Bank, \$3000; Tradesmen's National Bank, \$2600; Brown & Cochran, \$5166.88; Central Bank, \$2000.

We clip the following from the Sharon Herald of the 2d inst.: For the week ending July 20, at the Western Mill, guide and hoop mills double turn, except Thursday night, one turn for the hoop mill; bar and sheet mills single turn; spike factory on five days; puddle went on Tuesday morning of the present week. Blast Furnace No. 2 doing splendidly, making a very strong, fibrous, gray iron, ranking easily as extra No. 1 mill iron. Nothing done yet toward fitting up No. 1; it is all ready now for the brick-layers. Kimberly Mill on, as reported last week; puddle, guide and old hoop mill double turn; nail plate mill and nail factory on; bar mill three days; and all likely to remain on. Greenville off—the whole mill. The workmen were paid in full and told to find work wherever they could, as it was not

likely that the mill would go on for some time. The nail plate mill at the Western Iron Works goes on Thursday morning. Nail factory and chain works will go on Monday next.

The P. & R. Rolling Mill at Reading is again in full operation on day and night turn. There are no large orders to be filled at this season of the year, but a stock of rails is being provided for the Reading Railroad and branches, and for the filling of future orders. The manufacture of 45-pound rails for the Brazilian Railroad has been suspended for the present, although not nearly the quantity has been supplied that will be required.

The Glendower Mills at Danville turned out 316 tons of 56-pound rails in five days, making only five rounds on Saturday. This is the most work ever turned out at this mill. Under the old National Iron Co. management about 50 tons per day was all that could be got out of the machinery. It is said that they have steady work for some time to come.

Wm. P. Allen & Co., successors to Chas. B. Allen, have just commenced the manufacture of boiler, bridge and ship rivets at the southeast corner of American and York streets, Philadelphia. They will also continue the manufacture of the "C. B. Allen" brand of cast-steel locomotive, passenger and freight car springs. The business was first started in 1855, and the new firm commence under favorable auspices.

A. Weed & Co. have commenced the manufacture of files and file machinery at 1038 Ridge avenue, Philadelphia, and are meeting with a very fair measure of success.

## PITTSBURGH AND VICINITY.

McCullough, Dalzell & Co., Pittsburgh, are enlarging their crucible works in the 15th ward. They have erected a new building on the north side of the old works, and have made the original buildings three stories high. The foundation walls for new engines are completed, and the builders, Wm. Fisher & Sons, are to have them put in position in a few days. The firm are having one of Marshall Bros.' patent safety elevators put in the new works.

The iron mill of H. Lloyd & Son, Second avenue, Pittsburgh, is partially shut down for repairs. The rolling mill stacks are being rebuilt.

It is reported that 40 men were discharged from the P. R. R. blacksmith shop in Altoona during last week.

Sheriff Fife on Friday last sold 120 tons of common iron at 1½ cents per pound, and 600 tons of pig iron at \$14.25 per ton. Altogether the sale amounted to about \$30,000. It was the property of Reese, Graff & Woods, and was sold on a judgment of James I. Bennett for use of John Moorhead. There is more to sell, but the sale was adjourned until Wednesday morning of this week.

Doyle & Co.'s glass works, on the South Side, destroyed by fire a short time since, are being reconstructed, and operations will be resumed in a few weeks.

Nearly 4000 freight cars are being built at the Altoona shops for the Fort Wayne and the Pan Handle railroads.

The Pennsylvania Forge and Iron Company, Pittsburgh, are about to start up their sheet mill and scrap furnace.

Plunkett, Ihmsen & Co. of the South Side are now making chimneys without the crimp, employing about 90 men and boys.

Duncan & Sons, Ripley & Co., Blakewell, Pears & Co., King, Son & Co., Richards, Hartley & Co., Doyle & Co., press houses, are still idle on the South Side.

The Keystone Bridge Company, Pittsburgh, will furnish the iron roof truss for the large stables to be erected in Georgetown by the Washington and Georgetown Passenger Railway Company. The company has also secured a contract from the city of Boston for the construction of an iron bridge to carry Dartmouth street over the intersection of the Boston and Albany and Boston and Providence railroads. It will be a wrought iron pin connection truss, 225 feet in length and 60 feet in width. It will be properly ornamented, and when completed will be an imposing structure.

The roof of the boiler house in the steel works of Smith, Sutton & Co., Allegheny, was damaged by fire on Wednesday evening of last week to the extent of \$1000.

Messrs. McIntosh, Hemphill & Co., machinists, Pittsburgh, are making some 16-ton housings for the Otis Steel Works at Cleveland, Ohio.

## WEST VIRGINIA.

Work will be resumed at the Wheeling Hinge Factory on the 12th of August.

## OHIO.

The Union Iron Works Company of Cleveland, organized in 1865, which failed last week, were prosperous till 18 months ago, when they built a blast furnace at great expense which has proved to be a poor investment and the beginning of the company's trouble, though not the immediate cause of their failure. The embarrassed firms here owe the company largely, and, being unable to meet their obligations, it was only left for them to assign. Their liabilities are \$215,000, \$95,000 of which is in a first mortgage on all the company's property. As yet it is impossible to state what the assets will be. The company has invested over \$500,000, but it is thought that now not much more than enough to satisfy the mortgage could be realized. The failure was a genuine sensation to most of the business public of Cleveland and wholly unexpected by the employees, who are now out of employment, but most of whom will probably gradually get work with the Cleveland Rolling Mill Company.

The Bellaire Nail Works declared a dividend of 3 per cent. out of the earnings of the last six months.

The Falcon Iron Works, of Niles, are idle. But 10 furnaces are running in Brown, Bonnell & Co.'s Youngstown mill.

Over 9000 mowers and reapers have been sold during the present season by the Buckeye Agricultural Works of Akron. The works will resume full operations about the 10th of August.

At a recent meeting of the directors of the Gaylord Rolling Mill, it was resolved to ask an extension of creditors of one, two and three years. A statement of the affairs of the company is now being prepared with

a view to submitting to an examination of the creditors.—*Portsmouth Valley Blade.*

Hecla Furnace, in the Hanging Rock region, pays 5¢ to 6¼¢ per bushel for charcoal, \$1.50 to \$2.25 for ore, and wages range from 90 cents to \$1.15 per day. The furnace is making about 11 tons of iron per day.

The second steam hammer made by the Cuyahoga Works for the Otis Iron and Steel Company, Cleveland, has been set up at their works, and has been in operation for two weeks past.

The government have again awarded the Howe Scale Company of Cleveland the contract for supplying the Treasury and customs departments with the improved Howe Scales, this being the third year of the continuance of the contract. The Indian Commissioners have also awarded the same company the contract for wagon, platform, post office and counter scales for the present year.

The Akron Beacon says: The rolling mill is again running on full time. The home factory of Cuyahoga Falls is in process of erection.

The South Cleveland Advocate says: The Bessemer side of the steel works has been shut down all the week on account of some large pumps being put in the steel works. Several team loads of wire were started off from the wire mills, this ward, by express, on Wednesday and Thursday of this week, in order to reach the western point, where it was required in the harvest field. This action was necessary in order to get the wire delivered by the time designated on the contract.

## MISSOURI.

The St. Louis Review says: The Vulcan Iron and Steel Works at Carondelet contemplate starting up early in September, with all of their furnaces and rolling mill and steel works. The prices of ore and coal and coke are lower than ever, and the advance in steel rails is an encouraging sign of the times.

The St. Louis Tag and Card Manufactory have an order for 500,000 strong double-head giant shipping tags, from a St. Louis cotton compress company, besides other large orders. This firm command a large portion of the trade of the West and South.

## KENTUCKY.

After a week's repairs, caused by the breaking of the fly-wheel, the Princess Furnace started up again Saturday, the 20th ult., and is now doing splendidly.

The Norton Iron Works Furnace, Ashland, is making from 60 to 65 tons of good iron per day and working well. It is rumored that the forge and plate mill and nail factory will resume operations the early part of this month.

## Statistics of the Foreign Iron Trade in 1877.

BY JAMES M. SWANK.

(Continued.)

[Abstract from annual report to the American Iron and Steel Association, published July 15, 1878.]

## GERMANY.

The production of pig iron in the empire of Germany and Grand Duchy of Luxembourg from 1872 to 1875 is given by M. Deby in his last statistical report as Foreign Secretary of the Iron and Steel Institute of Great Britain, as follows, in English tons: 1872, 1,988,394 tons; 1873, 2,240,574 tons; 1874, 1,906,262 tons; 1875, 2,029,389 tons. Recent official returns give the production of pig iron in Germany, without mentioning Luxembourg, in 1876 and 1877, as follows: 1876, 1,614,700 tons; 1877, 1,566,600 tons. As the annual production of pig iron in Luxembourg does not vary much from 250,000 tons, it will be seen that, whether its product be included in the figures for 1876 and 1877 or not, the production of pig iron in Germany in these years declined below that of any one of the four preceding years. The production of pig iron in Luxembourg in 1873 and 1874 was given as follows in our last annual report, in English tons: 1873, 257,411 tons; 1874, 246,054 tons. By deducting these known quantities from M. Deby's figures for the years named, and assuming 250,000 tons to be a fair estimate of the production of pig iron by Luxembourg in 1875, and that its production is not included in the official statistics for 1876 and 1877, we obtain the statistics of the production of pig iron in Germany from 1873 to 1877. The official statistics of the production of pig iron by Germany alone in 1872, the first year after the absorption of Alsace and Lorraine, were given as 1,807,345 tons in our last annual report. We have then the following table of the production of pig iron in the German empire from 1872 to 1877:

Years.	Tons.	Years.	Tons.
1872	1,807,345	1875	1,779,389
1873	1,988,394	1876	1,614,700
1874	1,906,262	1877	1,566,600

Prussia makes more than one-half of the pig iron product of all Germany. The statistics in English tons for the past four years are as follows: 1874, 1,280,268 tons; 1875, 1,398,336 tons; 1876, 1,324,386 tons; 1877, 1,421,031 tons. These figures, which are derived from English sources, indicate a steady increase in the production of pig iron by Prussia, although that of the German empire has as steadily declined during the past few years. M. Deby states that during the year 1876 the number of blast furnaces in Prussia was 338, of which 172, or 50.9 per cent., were in blast.

The following table, also from official sources, shows the extent of other iron and steel industries of the German empire for 1875, the year for which the latest detailed returns have been received:

Kind of Works.	No. of Works.	Prod'n. English Tons.
Foundries	874	484,638
Rolling mills (pig iron)	203	1,051,392
Rolling mills (scrap)	197	190,995
Raw and cement steel works	44	128,449
Cast and Bessemer steel works	42	242,206
Total	1,362	2,097,680

The total production of wrought iron in Germany in 1876 is estimated by M. Deby at 805,000 English tons.

The production of iron rails in Germany in 1875 was 227,975 English tons; of steel

rails, 241,505 tons; total, 469,480 tons. The production of other forms of iron and steel in the same year was as follows: Plate and sheet iron, 113,786 tons; steel plate, 2901 tons. The total quantity of iron and steel worked into finished forms in 1875 was as follows: Iron, 1,088,785 tons; steel, 347,336 tons; total, 1,436,121 tons.

An additional testimonial to the value of steel rails has been published in connection with German railways, as follows: The whole extent of the Cologne and Minden Railway system is 1417 miles. The length of line which has now received steel rails is 1060 miles. The effect of the introduction of steel rails upon the Cologne and Minden system has been very great, rail renewals having been reduced during the three years ending with 1876 inclusive to the extent of 70 per cent.

The whole number of workmen engaged in the iron and steel industries of Germany in 1875, including those employed at the ore mines, was 164,601. It has been estimated that 37,000 workmen have been discharged from German iron works since April, 1873. The total value of the iron and steel products of Germany in 1872 is placed at 845,939,242 marks; in 1875 at 568,647,247 marks.

M. Deby gives two interesting tables, showing the financial condition of the leading German iron works in 1876 and 1877. Of twenty companies only three paid dividends in 1876. In April, 1873, these companies employed 28,437 workmen; in April, 1877, they employed 15,114 workmen. The capital stock of sixteen companies was originally 180,206,400 marks; in July, 1877, it had shrunk on the stock exchange to 44,348,856 marks.

The production of coal in Germany in 1877 is reported to have amounted to 48,337,050 tons, against 49,588,050 tons in 1876. The production in 1874 was 46,658,000 tons. Germany is making rapid strides in the development of the coal fields of Westphalia and other portions of her territory, a result which is greatly promoted by the encouragement given by the German government in preferring so far as possible domestic coal for government purposes. It is understood that preference is also given by the government in its purchases to other articles of domestic production besides coal.

The English technical journal, *Engineering*, illustrates and describes some new blast furnaces of the Societe Anonyme des Mines et Usines de Hof-Silben-Schwartzenberg, at Hof, in Bavaria, which we briefly notice. There are four furnaces, supplied with blast heated by Whitwell's stoves, four stoves to each furnace. The furnaces are situated on higher ground than the boilers and blast engine, which are erected within a short distance of the banks of the river Saale, whence a supply of water can be drawn for the tuyeres and boilers without much expense for pumping. The furnaces are 57½ feet high and 19 feet in diameter at the boshes. They are hooped with wrought-iron bands. The charging apparatus is of the ordinary type generally adopted in Cleveland. The blast engines are by the Societe John Cockerill, of Seraing. The works are said to have been planned with much care and judgment.

## FRANCE.

In attempting a summary of the iron and steel production of France we encounter two sets of statistics—one prepared under government auspices and the other by direction of the association of French ironmasters. We shall quote as judiciously as possible from both authorities. In some instances only approximate accuracy is possible under the circumstances.

The production of pig iron in France in 1877 was 1,350,393 metric tons, against 1,449,537 tons in 1876, 1,416,307 tons in 1875, and 1,423,307 tons in 1874. A metric ton equals 2204 English pounds. The production of rolled iron in France in 1877 was 770,144 tons, against 848,408 tons in 1876, 904,990 tons in 1875 and 862,254 tons in 1874. The rolled iron was divided into 73,103 tons of rails, 107,452 tons of sheets and 589,589 tons of other forms. The production of steel of all kinds in 1877 was 259,971 tons, against 261,878 tons in 1876, 239,205 tons in 1875 and 217,072 tons in 1874. Of the steel product of 1877, 184,663 tons were Bessemer and Martin rails; 33,084 tons were Bessemer and Martin bar, angle and plate; 101 tons were other steel rails, and 42,123 tons were cast, puddled and cemented steel.

The total quantity of iron and steel exported from France during 1877 was 169,204 tons, against 206,248 tons in 1876, a decrease in 1877 of about 18 per cent. The exports in 1875 were 202,277 tons. The iron ore exported in 1877 amounted to 79,112 tons, against 105,190 tons in 1876 and 179,668 tons in 1875. The exports of ore from France are almost wholly to her near neighbors, Belgium and Germany, and the decreased exports in 1876 and 1877 reflect the lack of prosperity in their iron industries. The iron ore imported into France in 1877 aggregated 975,631 tons, against 849,186 tons in 1876, and 832,798 tons in 1875. Of the imports of 1877, 330,049 tons came from Algeria, 248,227 tons from Spain, 223,444 tons from Belgium, 139,776 tons from Italy, 30,709 tons from Germany, and 3426 tons from Great Britain and all other countries. During 1877 the quantity of pig and cast iron imported into France was 212,896 tons, against 184,344 tons in 1876; of wrought iron, 62,735 tons, against 56,385 tons in 1876; and of steel, 5009 tons, against 5445 tons in 1876.

The following table shows the consumption of iron and steel rails in France from 1865 to 1877:

Years.	Iron.	Steel.	Total.
1865	151,972	.....	151,972
1866	125,974	3,687	129,661
1867	146,601	10,967	157,568
1868	124,734	25,759	150,493
1869	133,479	50,225	183,704
1870	81,433	41,489	122,922
1871	64,297	22,613	86,910
1872	101,686	52,194	153,880
1873	124,717	64,097	188,814
1874	125,667	102,227	227,894
1875	98,889	120,660	219,549
1876	57,935	130,681	188,616
1877	48,888	136,549	185,437

The aggregate extent of new railway opened in France in 1877 was 423½ miles span. The whole length of railway existing in France at the close of 1877 was 13,148½ miles.



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Eighteen years' practical experience.  
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Polishing Felts of every description.

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## NOTICE.

We wish to inform the trade that besides our own there are two other firms in the city of Philadelphia manufacturing Shovels, Spades and Scoops under the name of **ROWLAND**, and the way we distinguish our goods from theirs is by branding them

**B. Rowland & Co.**  
**CAST STEEL.**



All goods of our make branded with the **ANCHOR** are warranted in every particular, so be particular to see that you get **B. ROWLAND & CO.'S ANCHOR BRAND GOODS** if you wish the guarantee as to their quality. Respectfully,

**B. ROWLAND & CO.,**

No. 27 North Fifth St.,

PHILADELPHIA, U. S. A.

have not yet been published. The production in 1876 was 17,047,761 tons, in 1875 it was 16,949,031 tons, and in 1874 it was 17,059,547 tons. France imports coal from Germany, Great Britain and Belgium. From Great Britain she imported 2,982,372 tons in 1877, against 3,250,564 tons in 1876.

It will be seen from the foregoing statistics, which are at least sufficiently correct for comparative purposes, that the French iron trade has declined in volume during the past year. The depression, however, has been most felt in prices, which have sympathized with the decline in other countries. But, notwithstanding these unfavorable results, the French iron and steel industries are not suffering the same degree of prostration that prevails in Great Britain, Germany, the United States, and some other countries. Other industries of France have grievously suffered within the past two or three years, largely through the inability of other countries to purchase the articles of luxury in the manufacture or production of which she so greatly excels, and largely through the adoption by them of the same protective policy which has served her people so well; but her iron and steel industries have been maintained in fair activity because of her tariff, which makes it difficult for British and Belgian ironmasters to compete with French ironmasters in French markets. A single illustration will show how the French iron and steel industries have been benefited by protection within the past year. Bessemer steel rails cannot be made at a profit in France for much less than £8, or \$40, and contracts have recently been made at about this price; yet either England or Belgium, if not excluded by protective duties, would have been glad to furnish rails at £6, or \$30. The French tariff has within the past year saved the Bessemer steel industry of France from foreign competition which it would have been powerless to resist.

The French newspaper, *L'Ancr*, gave at the beginning of January last the following review of the French iron trade in 1877:

"1877, as a year of trade, has been one of dismal disaster, and the iron trade has been one of those which has suffered the most cruelly. During the course of the years immediately preceding 1877 business had been slackening, and prices coming down. But at the opening of 1877 people imagined that the end of the crisis was approaching; the dullness had lasted so long that its further duration seemed impossible, while the prosperity the exhibition was to bring with it began to be discounted. But the course of events falsified all these expectations; the crisis reached a pitch of unexampled acuteness, and ironmasters had to make concessions on prices which were themselves little better than ruinous. The effects of the dead-lock produced by the war in the East have been aggravated for France by an internal conflict of even greater moment to her interests. For the present this is ended. The year 1877 was to have brought about beneficial changes in our economical and fiscal relations. Its actual good deeds have been absolutely nil.

"The consumption of iron and steel in France has increased some 40,000 to 50,000 tons in each year from 1873 to 1875. It slackened considerably in 1876, and possibly may have fallen behind the average consumption; there is small likelihood that the ground thus lost has been recovered in 1877. Even then its maximum would only be some 1,100,000 tons, when it was 20,000 tons more in 1875. These figures will show the present state of the iron trade. Production is beyond consumption. Production has been too rapid, and must wait until an equilibrium has been established."

Prices of iron in France in June of the present year were as follows: Coke-made iron rails sold at £6. 12/ per ton; superior qualities brought £6. 16/ per ton. Good machine iron was quoted at £8 to £8. 4/ per ton. In the Nord large contracts for iron have been concluded at £6. 2/ per ton. Thick plates are maintained in the Nord at £8. 16/ per ton. First-class rolled iron has been quoted in the Meurthe-et-Moselle at £6. 12/ per ton.

(To be Continued.)

The hereditary king of Cyprus has turned up at St. Petersburg. He wants to sell his birthright to England. He claims to be the last of the Lusignans, descendants of the kings of Cyprus and Armenia, and has had some sort of recognition from the Russian Imperial family, on whose bounty he has lived since his fortune was swept away in the futile insurrection of 1827. The last of the Lusignans, a penniless artisan, was said to have died in Italy last year, leaving several daughters, who were adopted by charitable folk.

Forty-five millions of pairs of sewed shoes and 55,000,000 of pairs of pegged shoes were made and sold by the manufacturers of the United States in 1877, and 85 per cent. of the work done on these shoes was done by machinery. The uppers are cut out by hand, simply because of the variability of the quality of the leather in the same skin. The soles are cut out by machinery, and the binding, pasting, closing, crimping, stitching, healing and polishing are all done by machinery, without the aid of human hands.

Michael Zacehewski, a Pole, who was employed in the nickel works on Cooper's Creek, Camden, N. J., was instantly killed on the 2d inst. by the bursting of a huge pot into which he was pouring molten metal. A stream of water was flowing into the pot, the hot metal was poured too rapidly, and steam was generated, which caused the explosion. Two laborers, Jakoliski and Bicking, were also injured, the first named, it is feared, fatally.

The safety of railway travel on the Continent is largely imaginary. In April, this year, 25 trains got off the rails upon German railways, and there were also 10 collisions. Four of the trains in collision were passenger trains. These statistics do not speak very favorably for German railway management.

The magistrates at Hanley, England, having found it useless to fine miners for carrying lucifer matches down into coal pits, have begun to send the offenders to jail.

## THE PARIS EXPOSITION.

Notes of American Exhibits.

(From our Special Correspondent at Paris.)

The show of farm and garden tools, such as forks, hoes and rakes, is one of the most creditable parts of the American exhibit. Our tools of this class have had a most enviable reputation abroad for years. Their lightness and strength have been a most capital recommendation, and the beauty of their proportions and the finish of the parts, when it has been found that these do not hide faults of construction and inferior materials, have been additional inducements to purchasers. Among the tools of the different makers it would be a difficult matter to decide between them from external appearance. They are all deserving of great praise, and we believe we are strictly within the bounds of truth when we say that no other country in the world can show such progress and perfection in the styles and manufacture of these necessary implements, a truth that is fully attested by the foreign demand which for years has existed for these goods, and which steadily increases.

BROWN, HINMAN & CO.,

Columbus, Ohio, have on exhibition an elegant assortment of their garden and farming tools. In steel goods they show every variety of manure and barley forks, spading forks, hay and straw forks, potato and manure hooks, socket and shank field hoes, cotton hoes, mortar and street hoes, handled planters' hoes, garden rakes, weeding rake and hoe, &c., and a good line of malleable garden rakes. In wood goods they exhibit an assortment of Lamson's patent scythe snaths, grain cradles, &c., handles for forks, hoes and shovels, hand hay rakes, &c. The goods of this house show an excellent finish, and with those exhibited by other firms fully sustain the very enviable reputation America has acquired for the manufacture of this grade of implements.

WITHINGTON & COOLEY MFG. CO.,

of Jackson, Mich., have a large and handsome assortment of garden and farming tools, embracing socket and solid shank field hoes, sharp point 2, 4 and 6 prong weeding hoes, cast steel and malleable garden rakes; hay, straw, manure, barley, header, spading, sluice, fish, tanner's and other forks; cast-steel potato and manure hooks, scythe snaths, grain cradles, corn knives, hay knives, &c. This factory has been in operation for 30 years, and was incorporated last year. It has had a very extensive export trade for some years, and it is stated that their patterns and styles are adapted to and sold in all the markets of the world. The goods are elegantly finished, and they claim that promptness in adopting every valuable improvement, and the uniform and reliable excellence of the material, temper, workmanship and finish of their tools have given them a substantial and world-wide reputation.

THE AUBURN MANUFACTURING CO.,

Auburn, N. Y., make a most attractive display of their splendid line of hand tools for farm and garden purposes. Upon a large circular platform they have erected an arched structure of elegant design, surmounted with sample boards showing their tools from every point of view. Among the goods we noticed a fine assortment of steel manure forks; hay and straw forks, both round and oval; spading forks, barley and coke forks, and forks for special purposes; potato hooks, garden rakes, both steel and malleable, &c. They also show a fine assortment of field, socket and shank hoes; handled planters' hoes, weeding hoes for garden and farm use, square eye planters' hoes, &c. They also exhibit a very large variety of edge goods, such as grain and grass scythes, bush or bramble scythes, Western corn knives, hay and straw knives and grass hooks. In wood goods they exhibit grain cradles, Lamson's patent scythe snaths, hand rakes and forks, hoe and rake handles. The display is the largest of its kind in the American section, and being so advantageously situated attracts a good deal of attention and deserved admiration. In order that visitors may see the goods exactly as they are turned out from the factory, a bundle of each of the specimens shown on the sample boards is also on exhibition, and as nearly 300 different kinds of goods are shown, these make around the platform of their structure quite a wall of glistening steel.

OLIVER AMES & CO.,

of North Easton, Mass., exhibit a handsome case of shovels, spades and scoops, draining spades and shovels, and spades for special purposes. These goods are shown in the ordinary finish required by the trade, both black and bright, and also some highly finished specimens of the same goods. They also exhibit a very respectable looking D-handle shovel and D-handle spade, both of which were made by Oliver Ames in 1812. The style differs but little from the goods in use at the present day.

SHEBLE & FISHER,

Fairmount Fork Works, Philadelphia, make a very good display of forks of different varieties, such as hay, manure, spading, turnip, potato, &c. The peculiarity of the forks made by this firm is that the tines and shanks are made from one piece of solid cast steel. They claim that the defects and weakness, which to a greater or less degree must result from welding, are avoided, and a much stronger fork in every way is made.

TRUMP BROS.,

Wilmington, Del., exhibit in the Machinery Hall a number of their Dexter and Fleetwood saws and machines in operation. These little machines are the admiration of all who see them. The Fleetwood saw carries coarse blades three-sixteenths of an inch wide or the finest Swiss or jeweler's saws, sawing wood one inch thick and under. They are adapted to all descriptions of light scroll or fret sawing in wood, bone, ivory, shell or metal. The beauty and finish of the work done on these machines is a source of constant surprise, and shows that it is more than a mere toy. The inlaid and silhouette work is especially beautiful, the samples shown in connection with the saw being most ex-



quiste in the tracery and delicate in their lines. The advantages claimed for the Fleetwood saw are: Simplicity of construction, strength of all the parts, compact and graceful form, quiet movement, and the low price at which it is sold; and that with little or no experience most beautiful articles, quite equal to the finest Italian and Swiss fret or scroll work, can be made; brackets, easels, picture frames, boxes, table mats, &c., in open scroll, inlaid or mosaic work. For the Dexter, Trump Bros. claim that it is a triumph of simplicity and good work. Its exceedingly low price, combined with good workmanship and practical usefulness, puts it far in advance of anything of the kind ever before manufactured. The distance from saw to back of frame is 12½ inches. It will hold the finest to coarsest saws, and will cut 1½-inch stuff, if desired, but is intended especially for light and rapid cutting. All of the machines made by the firm are warranted in every respect. They are very carefully made of the finest material, and the best mechanical skill is employed in their construction.

One of the most tastefully arranged exhibits in the American department is the display of agricultural forks of

**BATCHELLER & SONS**  
of Wallingford, Vt. A beautiful canopy structure consisting of columns and arches decorated in gold and colors, is the groundwork of the exhibit, and on the columns and in the rear of the canopy the large variety of forks made by this firm is shown. At the corners in front are columns of forks, and looking past this under the archway in the rear is a trophy of forks. The forks themselves are worthy of their installation, showing all the features which have given American tools of this class such enviable reputation.

**M. SEWARD & SON,**  
manufacturers of carriage hardware, New Haven, Conn., exhibit a large variety of clips and other light articles of carriage, wagon, truck, &c., hardware of a great variety of styles and admirably made. They are all manufactured from the best Norway rods and fitted up in the best manner, and being very smooth they require no filing to paint. Their factory, which has been established for more than 32 years, occupies a space of about 3000 square yards, half of which is built over. It employs 30 to 35 hands, and 60 machines of various kinds valued at \$40,000, exclusive of a 30-horse-power steam engine. Its business amounts to about \$150,000 a year, and it turns out annually 200,000 dozen clips and 175,000 dozen sundry articles of light carriage hardware. This house has just increased the number of articles it makes.

**ANDREW ALBRIGHT,**  
Newark, N. J., makes an attractive display of rubber-coated harness and carriage trimmings. The base of the trimmings is a metal core, either iron, bronze or German silver, covered with a coating of hard india-rubber, a tough, elastic composition, impervious to acids, water and atmosphere, will not tarnish, and protects the leather from iron rust, &c. A coupe, coach and light double harness are shown, and a variety of carriage trimmings.

**BAILEY WRINGING MACHINE CO.,**  
99 Chambers street, N. Y., have a good display of their wringers in the agricultural annex. It comprises 18 samples of various sizes of the Novelty, Improved Novelty, Cog-Wheel Novelty, and Cog-Wheel Excelsior for hand, and a No. 60 for hand or power. The display is very creditable, both in the variety of wringers shown, the quality of materials used and workmanship.

**STEPHENS PATENT VISE COMPANY,**  
41 Dey street, New York, exhibit eleven different sizes and styles of their patent parallel vises with swivel, taper, pipe and other attachments, as well as their patent planer vise. Among the merits claimed for the vise are the following: Its parts are interchangeable; it opens further, works easier, holds firmer, is heavier and more durable than any other vise; it is worked by clam and toggle joint; its movable jaws cannot twist from side to side; the slightest back motion of the handle instantly frees the work; there is no wear to the racks, for they merely engage and travel together without rubbing. The vises shown are arranged on a bench, so that parties interested can examine them and their working. They are made by the Colts Arms Company, Hartford, which is a sufficient guarantee for the quality of the workmanship. A prominent English periodical, in speaking of these vises, said, editorially: "The power of Stephens' patent vise is equal to every requirement. Being constructed upon correct principles, years of constant use will not wear its parts. But in the ordinary vises considerable wear and tear in the threads is inevitable, with consequent deterioration. Stephens' vise is the handsomest and most effective in use."

**THE SETH THOMAS CLOCK COMPANY,**  
of Thomaston, Conn., make a beautiful display of clocks and movements. In the center of the alcove assigned them, which is cased in black walnut and upholstered in gold and maroon rep, is a large tower clock, running. It is what they know as No. 12. It strikes the hour and quarters, is fitted with Dennison's gravity escapement and compensated zinc and steel pendulum. The ball of this monster clock weighs 300 pounds. Around the sides of this alcove are shown a large number of the various styles of common house and office, desk and calendar clocks. One case is full of movements without faces, varying in size from the nutmeg to the regulator, beating seconds and half seconds, all in operation. It is a very complete and interesting exhibit.

**F. KROEBER,**  
Forestville, Conn., exhibit a line of clocks, mostly of the cottage pattern, for which they claim the merit of cheapness and reliability. All the clocks have a patent device by which the hands can be turned each way without any injury to the clock.

**THE ANSONIA CLOCK COMPANY**  
make a very fine display in the main building of clocks and clock movements, including their various styles of round, hexagon cottage, gothic, mantel, &c., in gilt, silver

nickel, bronze, rosewood, black walnut and other finishes. The exhibit is especially noticeable for the variety of odd and attractive devices and combinations of clocks with various useful and ornamental articles. Among others we notice inkstands and thermometers combined with clocks, clocks in the hubs of wheels and of ships' helms, in the wheels of the car of time and many others.

**THE VICTOR SEWING MACHINE CO.,**  
Middletown, Conn., exhibit their "Victor" chuck and micrometer caliper. This chuck embodies new and essential features, for which the manufacturers make the following claims: 1st. It is the only adjustable drill chuck, and is more simple, practical and effective than any in the market. 2d. The chuck is self-tightening and the grasping power of the clutches is much greater than in other chucks. 3d. The clutches being flush with the face or front of the chuck, the workman has less difficulty in adjusting the drills and greater durability is assured, as they are not liable to be broken by any strain or twist or by dropping the chuck. 4th. The levers are enlarged and rounded at their fulcrums, forming spherical bearings which rest against adjustable set-screws, producing a sure and easy adjustment at the will of the operative. 5th. The chuck is steel throughout and of the finest mechanism. The chuck holds from 0 to ¾ and will carry ¾ by reducing the shank. The micrometer caliper is a very good sample of this reliable and convenient tool, which is destined eventually, we believe, to supersede the old cumbersome and inaccurate gauge plates. Indeed, to machinists and tool makers it is indispensable now on work requiring very accurate and close measurement. Its capacity is one inch and is graduated to one-thousandths, but can readily be set one-half and quarter thousandths, and is so constructed that any wear resulting from use can be readily adjusted.

**D. E. WHITON,**  
West Stafford, Conn., exhibits some samples of a chuck manufactured by him.

**SMITH & EGGE,**  
Bridgeport, Conn., exhibit a small chain of very simple but very ingenious construction, the links being machine-wrought and the chain formed by machinery. It is shown in brass and nickel-plate in long pieces and made into watch chains. They also exhibit a line of their patent padlocks.

**THE NATIONAL SPRING CO.,**  
New York, exhibit in the Main Building samples of their volute and coil car springs, also Vose, Dinsmore & Co.'s rubber center spiral freight spring, and a model of an outside bearing car truck for a 4 feet 8½-inch gauge, the latter the invention of Mr. Richard Vose.

**MORSE TWIST DRILL AND MACHINE CO.,**  
of New Bedford, fill a show case near the main aisle of the Machinery Hall with samples of their manufactures, including Morse patent straight-lip increase twist drill, Beach's patent self-centering chuck, solid and shell reamers, bit stock drills, drills for Coes, Worcester, Hunter and other hand drill presses, center and adjustable drill chucks, drill grinding machines. The tools show excellent material and superior workmanship. All are beautifully polished and show the high character of the steel used. The range of sizes shown is very marked. The assortment includes drills as fine as a cambric needle and some two inches in diameter and two feet long. The utmost care is taken in the different processes of manufacture to insure perfect accuracy, and all tools are exact to Whitworth's standard gauges.

American live cattle are arriving in London in great numbers. One thousand reached there on one day, and the London Graphic says that some of them were so "mountainous" that they might be made fit subjects of decent itinerant shows.

## Special Notices.

**H. Y. CASTNER,**  
Analytical Chemist and Assayer.  
Assays of Ores and Analytical Work of every character promptly attended to. Specialty made in the Analyses of Coals, Pig Irons and Iron Ores.  
No. 43 Pine St., New York.

Terms moderate. Instruction for obtaining proper sample furnished upon application.

## TWO YOUNG MEN

With moderate cash capital wish to purchase an established Hardware Business.

Address, **X. Y.**  
Office of *The Iron Age*, 83 Reade St., N. Y.

**WANTED.**—A SITUATION WITH A HEATER, Range and Stove House anywhere, as salesman and manager, or with a foundry.

Address, **Z. A.**  
Care 259 Pearl St., New York.

**SITUATION WANTED.**—AS TRAVELING Agent. Eleven years' experience in the Hardware business. Have traveled five years for a manufacturing house in New York city. Good city and State trade. Have also traveled in the Western States. Satisfactory reason for leaving present employers. Address, **"LOOKS,"**

Office of *The Iron Age*, 83 Reade St., N. Y.

## Wanted,

Situations by two thoroughly practical men, viz., Roller and Roll Turner. Fully experienced in Rails (iron or steel), Angle, Tee, Channel, Beam, Merchant and Band Irons. Best of reference from last employer. Address, **J. CAWFIELD,**

Newburgh, O.

## THE

## Norwich Lock Mfg. Co.

Norwich, Conn.,

Having largely increased their line of Locks, Knobs, &c., and the facilities for their manufacture, solicit the especial attention of jobbers and purchasers for export to their goods.

**SIDNEY TURNER, President,**

**CHAS. H. BEEBE, Treasurer.**

## Special Notices.

### BISSELL & WELLES,

### AUCTIONEERS.

Office of  
THE TABLE CUTLERY ASSOCIATION OF THE U. S.,  
NEW YORK, July, 1878.

To THE TRADE: Hereafter all "Seconds," made by the members of this Association will be sold at auction through Messrs. Bissell & Welles, Auctioneers, at their salesroom, No. 83 Chambers and 65 Reade streets. No sale of Seconds will be made in any other way.

By order of the Association,  
**R. N. OAKMAN,** Executive  
**C. S. LANDERS,** Committee.  
**B. B. YALE,**  
**H. A. CURTISS,**

Referring to above announcement, we will state to the trade that we will make our first sale of Seconds for the Association in our trade sale of **August 29 and 30.**

## BISSELL & WELLES,

### AUCTIONEERS.

### MANUFACTURERS

### OF

### Hardware Specialties

will find an opportunity for securing the control of a tool which should be in the hands of every mechanic. For a new tool it has met with great success wherever introduced. There is a growing demand for it. Present manufacturers desire to dispose of it in consequence of their own business, which is of a different character, requiring all their attention and capital. Address

**"SPECIALTY,"**

Office of *The Iron Age*, 220 S. 4th St., Phila., Pa.

## To Manufacturers and Jobbers of

## Hardware, Cutlery, &c.

Manufacturers and Jobbers, having surplus stocks or goods that from any cause are unsaleable upon which they wish to realize, or assignees who have stocks to dispose of, will find a cash purchaser by communicating with

**W. M. CALDWELL,**

Dealer in

**Job and Auction Lots of Hardware,**

**Cutlery, &c.,**

**103 Chambers St., New York.**

## TABLE CUTLERY,

## Cheap!

To get bargains out of the \$10,000 worth of Table Cutlery purchased by me at late trade sale of the Cutlery Association send for list of numbers, styles, quantities and quotation.

**W. M. CALDWELL,**

**Hardware Commissioner,**

**103 Chambers St., N. Y.**

## SECOND-HAND MACHINERY.

One Steam Hammer, cylinder 16x32.

One Davy Steam Hammer, cylinder 12x12.

One train Roll, 16 inch, one train Roll, 8 inch, both with housings complete; one pair large shears; two 40 H. P. Locomotive Boilers. All in good order and for sale cheap for cash or in exchange for Old Metals. By

**DANIEL W. RICHARDS & CO.,**

**88 to 96 Mangin St., New York.**

## Second-Hand Machinery.

One 14 in. x 30 in. Whitehill & Smith Adj. Cut-off Engine, Wheel 10 ft. diam., and

One 54 in. x 16 ft. Tub'r Boiler for same; both almost new.

One 10 in. x 24 in. Fishkill Landing Engine, and

One 48 in. x 14 ft. Tub'r Boiler for same.

One 10 in. x 24 in. Harris Corlies Engine, with Boiler, Pump and Heater, never run, price very low.

One 26 in. x 17½ ft. Engine Lathe, Rod and Cross Feed, with Taper Attachment. One Lincoln Gear Cutter, nearly new. Two Lincoln Milling Machines. Four Brainerd Milling Machines. One each 1, 2, 3 and 4 spindle Drills, Pratt & Whitney. One No. 6 Root Blower. One 80 lb. Merrill Drop Hammer, good as new. 70 feet 2½ in. Double belt. 38 ft. 10 in. Double Belt.

**E. P. BULLARD, 14 Dey St., New York.**

## A Rare Chance.

FOR SALE, an established Hardware Business of 16 years' standing, in a Western city. Location unexcelled. Capital required, \$10,000. Sickens the cause of desire to sell. For particulars address

**HARDWARE,**

Lock Box M, Philadelphia P. O.

## WANTED,

In every city in the United States, a responsible and well-known party to represent us.

**PHILADELPHIA HYDRAULIC WORKS,**

**Philadelphia, Pa.**

Cor. Evelina & Levant, near 3d & Spruce Sts.

## For Sale,

## Valuable Manufacturing Property.

Foundry and Machine Shop capable of producing the heaviest work. Large yard room, a good wharf and railroad connection by spur track. Situated at South Norwalk, Conn. Terms reasonable.

**E. HILL, Trustee.**

## For Sale,

A new, clean stock of Iron, Heavy Hardware, Wagon Wood Stock and Agricultural Implements, with a good established trade, both wholesale and retail, in a thriving Western city. Reason for selling: Party wishes to confine his business exclusively to Jobbing Shelf Hardware. For further particulars address

**P. & CO.,**

Office of *The Iron Age*, 83 Reade St., New York.

## WANTED.

A first-class business man familiar with machinery and manufacturing, capable of handling large bodies of men, desires a responsible position. References satisfactory. Address,

**IRON AND STEEL,**

Care of P. O. Box 813, Bridgeport, Conn.

## Special Notices.

### JENNINGS'S

### COMBINATION DISCOUNT TABLES.

(Published by the author.)

This Book contains 1500 tables for single and combination discounts, such as 17½%, 45%, 108¾%, 158½%, 258½%, 33½%, 358½%, 358½%, 458½%, 608½%, 658½%, 658½%, 658½%, 658½%, 658½%, &c., &c., which are so arranged as to be found without loss of time, and by their use either the Discount or Net on any amount of dollars and cents, from a penny to one million dollars, can be ascertained in a few seconds entirely by Addition. Just the thing for making or proving Invoices, finding Net Value of goods bought or sold, and comparing different Discounts, thereby saving time, blunders and Headwork.

Size of Book, 11 inches long by 9 inches deep.

Contents, 50 pages, 30 Tables on a page, solid figures. A copious Index, &c.; 70 pages in all.

**Editorial Notice from *The Iron Age*, dated Feb. 21, 1878.**

We have received from Mr. S. H. Jennings, Deep River, Conn., a copy of his new book, entitled "Jennings's Combination Discount Tables," and after a careful examination we very cheerfully commend it to the trade, believing it will fill a want that has hitherto been unsupplied. The book contains 1500 tables for single and combination discounts, such as 35 per cent., 37½ per cent., 25 and 5 per cent., 60 and 5 and 7½ and 2 per cent., &c., which are so arranged as to be found without loss of time, and by their use either the discount or net, on any amount, from a penny to one million dollars, can be ascertained in a few seconds, entirely by addition.

By a novel arrangement of the tables they work equally well on either cents or dollars. Their principal uses are proving invoices received, making or proving bills of goods sold, and finding the net cost of separate articles on invoices of goods bought; but aside from this, the work being very comprehensive in its character, in fact covering the whole field of discounts, it must prove valuable as a book of reference when it is desired to compare different discounts, or to ascertain what results certain changes in prices would accomplish. We understand that it is highly spoken of by those who are using it, and we see no reason why it should not become a standard work for discount purposes so soon as its merits are known and appreciated. The publisher offers to send the book by mail, postpaid, to any address, on receipt of the price, \$3. This price seems moderate when the labor of compilation is considered, the quality of the paper, the printing, binding, &c., all of which show care and determination on the part of the author to furnish a book that should be accurate, and which with ordinary care will last a lifetime.

It will be mailed, postpaid, to any address, on receipt of the price, \$3. Currency may be sent by mail at my risk. Address

**S. H. JENNINGS,**

**Deep River, Conn.**

## To Steel Manufacturers.

An energetic young man with scientific training, who has had experience in the manufacture of Bessemer and Crucible Steel in preference to remaining unemployed would be willing to take a subordinate position with the prospect of being employed as blower in Bessemer or as melter in Siemens-Martin steel works. Highest recommendation as to integrity, character and ability furnished. A correspondence, which shall be strictly confidential, respectfully solicited.

Address, **Box 1308, New York.**

## J. H. JENKS & CO.,

## Manufacturing Machinists

**180 Centre Street, New York,**

are prepared, with a superior equipment of first-class tools and experienced mechanics, to contract for the designing and construction of special TOOLS, DIES, JIGS and GAUGES for duplicating interchangeable parts of fine machinery or sheet metal goods. Contracts for manufacturing staple goods in quantity solicited.

## Second-Hand Machinery

## For Sale Low.

## SEND FOR LIST.

Engine Lathe, built by Seth Wilmarth, 82 in. swing, 23 ft. bed, live spindle hollow, face plate both ends, one at front 6 ft. 4 in. diameter, one at rear 7 ft. 1½ in. diameter, two boring bars traversed by tail spindle, both arranged for spinning key ways; one of these bars is designed for work on rear face plate and has yoke to support outer end; on either face plate work may be bored, turned and splined without removing the fastenings. At rear face plate an adjustable bed 11 feet long, carrying an adjustable tool rest, the latter having 5 ft. 6 in. traverse, arranged to sit at any angle and in any position on above bed. Tail spindle is 5½ in. square, carriage is fed by a screw the full length of bed, cross feed automatic, 6 grades of feed to operate either, 10 grades of speed for live spindle, driving movement gears direct to front face plate, complete with counter-shaft for driving, splining and feeding. One large saddle or center rest.

Planer, built by W. Collier & Co., Salford, Eng., planes 54 in. wide, 48 in. high, 18 ft. long, automatic cross, vertical and angular feed, platen driven by gearing into step rack, return motion about 3 to 1; has third upright with vertical tool slider, automatic feed, to plane work that will not pass between the regular uprights. This slider has a vertical movement of 5 ft. 4 in. Counter-shaft.

**HOLYOKE MACHINE CO.,**

**Holyoke, Mass.**

## SPECIAL NOTICE.

The undersigned offer their services as agents to

**American Producers of Metals.**

They represent foreign brands of

**Zinc, Russia Iron, Hoop Iron, Window**

**Glass, Cutlery and Guns.**

**LOUIS WINDMULLER & ROELKER,**

**80 Reade Street, N. Y.**

## For Sale.

Twelve horse-power hoisting engine (no boiler), \$350; an eight horse-power hoister, with boiler, \$450; three six horse-power hoisters, with boilers, \$250, \$375 and \$150, respectively. All second hand but little used; in excellent order. Also, 1200 new and second-hand machines of every description, at prices far below their actual value. Send stamp for printed list, with prices annexed, fully describing all, stating just what you want. S. C. FORSAITH & CO., Machinists and General Machine Dealers, Manchester, N. H. N. B.—Special low freightage obtained for our patrons to any section of the United States or Canada.

## Special Notices.

### W. GARNER,

### General Merchant,

Mouldsworth, near Chester, England,

Supplies nearly every class of Goods,

including all kinds of

## Agricultural Machinery, Domestic

## Machines,

## SEWING MACHINES

## And Artificial Manures.

W. GARNER is open to represent any Foreign Manufacturers in England for the sale of their manufactures of whatever nature or kind. Having a wide and well established connection in the Provinces, could introduce some American, German and French products to mutual advantage.

W. GARNER is also open to buy any kind of Goods on commission, and ship them to any part of the world. Manufacturers or others desiring his assistance will please address (with full particulars in English) as above.

## Architectural Iron Work.

A practical work for Iron Workers, Architects and Engineers, and all whose trade, profession or business connects them with architectural iron work, showing the organization and mechanical and financial management of a foundry and shops for the manufacture of iron work for buildings, with specifications of iron work, useful tables and valuable suggestions for the successful conduct of the business, with many fine wood engravings.

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Yellow Metal.....	10	@	.....
Brass, heavy.....	10	@	.....
Composition, heavy.....	10	@	.....
Lead, solid.....	10	@	.....
Tea Lead.....	10	@	.....
Zinc.....	10	@	.....
Pewter, No. 1.....	10	@	.....
Pewter, No. 2.....	10	@	.....
Wrought Iron.....	10	@	.....
Light do.....	10	@	.....
Store Plate.....	10	@	.....
Machinery do.....	10	@	.....
Grate Bars.....	10	@	.....

The prices current for Rags, &c., are as follows:

Canvas, Linen.....	per 3	c.	@	35c.
Cotton, No. 1.....	per 3	c.	@	35c.
No. 2.....	per 3	c.	@	35c.
White, No. 1.....	per 3	c.	@	35c.
No. 2.....	per 3	c.	@	35c.
Seconds.....	per 3	c.	@	35c.
Mixed, Woolen.....	per 3	c.	@	35c.
Soft, do.....	per 3	c.	@	35c.
Gunny bagging.....	per 3	c.	@	35c.
Juste butts.....	per 3	c.	@	35c.
Kentucky bagging.....	per 3	c.	@	35c.
Book Stock.....	per 3	c.	@	35c.
Waste Paper and Scraps.....	per 3	c.	@	35c.
Kentucky Bale Rope.....	per 3	c.	@	35c.
Oakum Junk, No. 1.....	per 3	c.	@	35c.
No. 2.....	per 3	c.	@	35c.
Trass Shaking.....	per 3	c.	@	35c.
Garred Rope.....	per 3	c.	@	35c.

## EXPORTS

Bremen.....	Quan. Value.	Mach'y, pkgs.	27	1,350
Ag. imp. pkgs.	28	2,610		
Tinware, cs.	3	214		
Mach'y, cs.	9	859		
Hdw., cs.	70	2,490		
Antwerp.....				
Cartridges, cs.	309	1,500		
Ag. imp. pkgs.	3	214		
Arms, cs.	5	1,000		
Lead, pkgs.	4103	11,360		
Pumps, pkgs.	4	220		
Hdw., cs.	3	96		
Havre.....				
Mf. iron, pkgs.	128	410		
Hdw., cs.	4	95		
Nails, kgs.	30	80		
Mach'y, cs.	1	75		
China.....				
Sew. mach., cs.	1	73		
St. imp'd w're, cs.	36	940		
Ag. imp. pkgs.	3	140		
Dutch West Indies.....				
Hdw., cs.	89	872		
Hamburg.....				
Hdw., cs.	51	2,477		
Copper, cks.	139	20,640		
Belting, bls.	3	712		
Mach'y, cs.	11	1,782		
Cy mts, pkgs.	6	50		
Ag. imp. pkgs.	1	120		
Type, pkgs.	1	155		
Mf. iron, pkgs.	8	175		
Arms, cs.	4	180		
Liverpool.....				
Pt'd w're, cs.	3	409		
Pumps, pkgs.	1	657		
Ag. imp. pkgs.	1	150		
Car. w'ls, cs.	1	120		
Hdw., pkgs.	159	5,878		
Mach'y, pkgs.	1	120		
Iron safe.....	1	1,061		
Konigsberg.....				
Pumps, pkgs.	6	250		
Ag. imp. pkgs.	5	412		
Hdw., cs.	6	145		
Glasgow.....				
Ag. imp. pkgs.	35	770		
Hdw., pkgs.	69	881		
Iron, pkgs.	4	100		
Mf. iron, pkgs.	1	100		
Mach'y, cs.	1	100		
Belting, cs.	2	983		
British North American Colonies.....				
Coal, tons.....	185	740		
Bell.....	1	500		
Havre.....				
Mach'y, cs.	3	547		
Cutlery, cs.	3	647		
Ag. imp. pkgs.	48	4,184		
Hdw., pkgs.	19	543		
Porto Rico.....				
Hdw., pkgs.	18	167		
Mach'y, pkgs.	16	793		
New Zealand.....				
Mf. iron, pkgs.	50	600		
Wire, bxs., 13 1/2	34,500			
Ag. imp. pkgs.	1104	110,948		
British Possessions in Africa.....				
Mf. iron, pkgs.	753	14,600		
Belting, bales.	650			
British West Indies.....				
Nails, kgs.	40	140		
Nails, bxs.	22	100		
Hdw., cs.	21	266		
Saddlery, cs.	2	266		
Mf. iron, pkgs.	77	331		

## IMPORTS

Perkins, Livingstone & Co.	Post, Pig, cs., 500
Baker Hermann & Co.	Pig, tons, 500
Guns, cs., 4	Cast, tons, 250
Butcher knives and razors, cs., 3	Robins Chauncy & Son, Boxes, 50
Berbeck & J. & Co.	Order, Raw, cks., 80
Cases, 2	Pig, tons, 500
Dorp von Hug, Steelware, cs., 6	Wire rods, bbls., 16
Freidmann & Lauterjung, Mds, pkgs., 3	Sheet, bbls., 93
Franklyn C. G., Anvils, 33	Steel, Naylor & Co., Bundles, 1
Grinnell H., Packages, 4	Cases, 9
Iselin, Moser & Co., Cases, 2	Prosser Thos. & Son, Tire forgings, 44
Merchants' Dispatch Co., Arms, cs., 4	Scott & Co., Bundles, 50
Gun caps, cs., 4	Woodford W. O., Bundles, 77
Mount J. S., Packages, 2	Bars, 5
McJoy & Co., Cases, 13	Cases, 13
Mds, pkgs., 3	Order, Plates, 20
Moore's J. P. Sons, Arms, cs., 5	Metals, Bartram Bros., Metal, bbls., 1
Gun caps, cs., 1	Baring Bros., Tin, slabs, 612
Gun wads, cs., 2	Drexel, Morgan & Co., Tin plates, bxs., 1201
Wire and shot, cs., 2	Tin, bxs., 923
Schoverling & Daly, Guns, cs., 7	Hartman B., Lead bars, 2557
Firearms, 1	Hamel John B. Jr., Scrap metal, pkgs., 45
Struller, Law & Co., Boxes, 2	Hurtz Henry & Co., Tin slabs, 1431
Firearms, cs., 7	Jackson R. D., Bars, tin, bbls., 15
Spies, Kissam & Co., Gun caps, cs., 7	Meyer Moritz, Lead bars, 1036
Gun wads, cs., 2	McCoy & Co., Nickel, cs., 1
Woodford W. O., Grindstones, 46	Naylor & Co., Tin plates, bxs., 1242
Ward Asline, Mds, pkgs., 7	Phelps, Dodge & Co., Tin plates, bxs., 2239
Witte John G. & Bros., Cases, 12	Schneider Jos. & Co., Tin plates, bxs., 505
Wiebusch & Hilger, Hdw. Co., Cutlery, hdw. and anvils, pkgs., 471	Order, Antimony, cks., 50
Order, Guns, cs., 3	Tin plates, bxs., 3012
Packages, 29	Tin slabs, 226
Arms, cs., 53	Tin taggers, bxs., 85
Iron, Lima de D. H. & Co., Bundles, 1	Black tag's, bxs., 10
Milliken & Smith, Rods, bbls., 395	Tin slabs, 411
Marvel W. D., Ore, tons, 1000	

## COAL.

The trade for the past week has been exceedingly dull. Probably less business has been done than in the corresponding week for many years. In many offices the only sales on some days have been those by mail, nothing being done in person. The dealers have a great variety of reasons to account for all this, and say that it is to be expected, &c., that there is still a stock of Coal on hand, that people are waiting for the combination to break and that the drawback circular of the Philadelphia and Reading Railroad has frightened people. Whatever the reason is, the public are shy of the Coal market and do not buy. The domestic demand has not yet begun, most housekeepers having laid in an unusually large supply, which is by no means exhausted. This makes the retail trade dull, and has its effect upon the general market. Ostensibly, the circular of the Philadelphia and Reading Company is intended to put individual operators in the Schuylkill upon the same footing as itself and enable them to compete in the New York market. Its effect, however, has been to shake faith in the combination and to make people believe that the quantity of Coal likely to come to this market is much larger than is necessary. Coal dealers, however, profess unbounded faith in the situation, especially the Lehigh men. This is quite natural, as all the Lehigh sizes are scarce, chestnut only excepted, and the market takes readily all that is offered at the market rates. What the future of the trade will be is a matter beyond conjecture. Few men even among those best posted dare to express an opinion. Bituminous Coals are to some extent holding anthracite in check, and it is doubtless due to the low price of Cumberland that anthracite prices are kept down. Cumberland, although quoted at from \$4.20 to \$4.35, can probably be obtained in New York for the cargo for less than \$4, and perhaps as low as \$3.80. As a steam Coal it is doubtless superior to anthracite in a great many cases. The softer Coals are feeling the anthracite depression, the two markets reacting upon each other.

## PHILADELPHIA.

Office of The Iron Age, 230 South Fourth St. PHILADELPHIA, Aug. 6, 1878.

General business continues dull, although in some quarters there are indications of improvement, which it is hoped may not only become permanent, but extend to other departments as well. A good deal of talk is being made in regard to a revival of business in the Delaware shipyards, but there is really little of importance beyond what has already been published in these columns. Contracts have just been signed for a couple of new steamships, and a good deal of work is going on in the way of repairs and improvements on old vessels; all of which, however, was referred to at length in The Iron Age of July 18. In locomotive building there has been a decided improvement as compared with last year, and the prospects are considered fairly encouraging. The capacity of the Baldwin Locomotive Works is set down at 500 locomotives yearly, and no doubt that number or more could be built there if the demand was so great. This year so far there have been constructed 170 engines and 30 others are being built. Of the latter three are for Australia, two for Cuba and one for Canada, the others having been contracted for by American companies. The total number of locomotives built at the works is set at 4500, and the number per year for the past 25 years is stated as follows, the figures for 1878 being estimated:

Year.	No.	Year.	No.
1854.....	62	1867.....	127
1855.....	47	1868.....	124
1856.....	59	1869.....	235
1857.....	66	1870.....	286
1858.....	33	1871.....	331
1859.....	70	1872.....	422
1860.....	83	1873.....	437
1861.....	40	1874.....	102
1862.....	75	1875.....	130
1863.....	66	1876.....	272
1864.....	130	1877.....	185
1865.....	115	1878.....	230
1866.....	118	Total.....	3889

**Pig Iron.**—The market is without change and the tone still weak and halting. For large lots there is absolutely no demand, but for small lots of good No. 1 Foundry Iron buyers are willing to pay the quotations recently ruling. The outlook does not improve, and if production is continued at the present rate disaster to the trade seems inevitable. The depression of general business is reflected in the limited consumption of Pig Metal, for which at present there are no indications of an increased demand, but the reverse. Proprietors of furnaces, as a rule, are probably more disposed to abandon the business now than at any previous time, as a large majority see in the future nothing of a hopeful character. The course of the market has been downward for nearly five years, and as yet there are no indications that the turning point has been reached. Buyers are more timid than ever, while consumption has declined enormously, and the only hope of improvement seems to be based upon the fact that business can scarcely get into a worse condition, and any change at all must be for the better. There can be no doubt that only the best equipped and the best located furnaces will be able to maintain an existence, and even these may be seriously injured in competition with such as may eventually be swallowed up in bankruptcy. The chief difficulty seems to be that as yet there has been no figure reached at which it was felt that a permanent demand could be found for furnace products; a concession of fifty cents or a dollar a ton may occasionally have induced transactions, but as yet confidence in values seems to be as distant as ever, and new transactions, as a rule, means further concessions in prices. The requirements of the trade of course are increased consumption, failing that, a largely diminished production, and without one or other it is useless to expect improvement. Bessemer Iron is in active demand, but beyond this business is of a retail character, and sales usually in small lots for immediate use. We continue our late quotations, which fairly represent the market, although it is difficult to move anything but known brands, and even these cannot be placed in large blocks unless at material concessions in price. We quote: No. 1 Foundry, \$17.50 @ \$18.50;

No. 2, Foundry, \$16 @ \$16.50; Gray Forge, \$15 @ \$16; White and Mottled, \$13 @ \$14.

**Blooms.**—Sales have been on a larger scale during the past week, but prices are irregular, and concessions have to be made to secure a first-class buyer. We continue former quotations as a fair indication of values, viz.: Sunken Scrap Blooms (2464 lb), \$38 @ \$40; Northern Ore Blooms (2240 lb), \$35 @ \$39; best quality Charcoal Billets (2240 lb), for wire and steel purposes, \$58 @ \$60; Bars do., \$62.50 @ \$65; Sheet Iron Blooms, cornered (2464 lb), \$55 @ \$58; Cold-blast Charcoal Plate Blooms, \$51 @ \$53; run-out Anthracite, \$48 @ \$50.

**Muck Bars.**—The demand is still light, and only small lots are sold at about quoted rates, viz.: \$29 @ \$32, Philadelphia delivery, price according to quality.

**Structural Iron.**—The condition of the trade is unchanged, no large lots are required for, and in the mean time it seems as though the mills will not be able to make any important additions to the contracts already on hand. There has been a pretty active demand for small lots, however, and in the meantime there is no reason to complain of a scarcity of work. Prices are steady as before, viz.: Angles, 2.2¢ @ 2.4¢; Tees, 2.4¢ @ 2.5¢; Beams and Channels, 2.7¢ @ 2.8¢.

**Plate and Tank Iron.**—In this branch of the Iron trade there is a fair degree of activity; the mills are all pretty well supplied with orders, some being pushed to their fullest capacity. There are inquiries in the market which give promise of additional business, and for the present the outlook is decidedly encouraging. Work at the ship yards is being carried on with considerable vigor, in addition to which there is an inquiry for a large quantity of Tank Iron, which will probably be placed in course of a few days. Prices are unchanged, however, and the improved demand does not appear to have had any effect upon the market, unless in preventing a decline. We quote, viz.: Common Plates, 2.2¢ @ 2.3¢; Tank Iron, 2.3¢ @ 2.5¢; C. No. 1, 2.4¢ @ 2.6¢; Shell Iron, 2.75¢ @ 2.9¢; Flange Iron, 3.75¢ @ 4¢; Solid Firebox, 4.85¢ @ 5¢; and Best Bloom, 5.5¢ @ 6¢.

**Sheet Iron.**—There has been quite an active demand for thin Sheets, and a large fall trade seems to be anticipated by manufacturers. Consumers appear to have run bare of stock, and, therefore, have to supply their wants by frequent purchases. Prices are unchanged as follows: Common Sheet, No. 24 to 26, 2.9¢ @ 3¢; No. 27 to 28, 3.1¢ @ 3.2¢; Refined Sheet Iron, No. 25 to 28, 3.3¢ @ 3.4¢; No. 22 to 24, 3.1¢ @ 3.2¢; No. 16 to 21, 3.1¢; Best Bloom Sheets, No. 25 to 28, 5¢ @ 5.2¢; No. 22 to 24, 5¢; No. 16 to 21, 4.7¢ @ 4.8¢; Common Red Plates, 5-16 to 18, 2.4¢ @ 2.5¢; Refined Plates or Blue Annealed, 5-16 to 18, 2.5¢ @ 2.6¢; American, R. G., 5-16 to 18, 3¢ @ 3.1¢; Best Bloom, 5-16 to 18, 4.9¢ @ 5¢; Philadelphia Russia, 6¢ @ 6.5¢; A. Patent Planished, 10 1/2¢; B. Patent Planished, 9 1/2¢; Bloom Galvanized, 40¢; Refined Galvanized, 50¢.

**Bar Iron.**—There has been a little more demand for small sizes, but, as a rule, business continues dull and without improvement. Consumption is light, far below the capacity for production, and, as proprietors all desire to keep their own mills running as full as possible, competition continues as keen as ever. There has also been strong competition from Western manufacturers, and Bars have been offered at prices far below cost of production. The recent failures in Pittsburgh seem to explain the matter, the Eastern market being used solely as a means of raising money, and goods have, therefore, been sold regardless of cost. It is also asserted by Philadelphia manufacturers that they are paying higher for labor than is paid in the West, and a proposal for a reduction of 10¢ has been made to the men, which it is believed will have to be accepted or the mills closed until times improve. The whole trade is in an unsettled and unsatisfactory condition, with prices weak and irregular, although quotations are nominally unchanged, viz.: 1.5¢ @ 2¢, according to quality of the article.

**Steel Rails.**—The market is steady and unchanged, and no transactions of importance have been reported for some days past. The majority of the mills are full of work and not disposed to accept orders unless both price and deliveries are made satisfactory. It is rumored, however, that orders have been accepted at something below the figures recently ruling, but we cannot find anything to confirm the report. At the same time there is a pretty well defined impression that prices have reached a point at which buyers need not be uneasy, and in fact there is manifestly less anxiety to purchase than there was a month ago. We quote the market steady at \$42 @ \$45, at mill, according to section, terms and location of mill.

**Iron Rails.**—There is nothing new to report in Iron Rails; inquiries are numerous and there is more disposition to buy than to sell at the terms offered by buyers. Some sales have been effected, probably about 2000 tons, in lots, with inquiries for very considerable quantities, a portion of which will no doubt result in business at some date not far distant. We hear of one important order having been withdrawn from the market on account of the difficulty of negotiating securities, which appears to have been a very common occurrence of late. Prices are firm at \$32 @ \$34.50 at mills, according to quality, section and terms of payment.

**Old Rails.**—The market may be called firm and steady, but we cannot report anything like an advancing tendency, the weakness in other departments of the iron trade having checked the buoyant feeling reported during the past few weeks. Good Rails are held at about \$19.50, but buyers do not respond, and it would be difficult to secure a purchaser for quantity at over \$19, although time sales of small lots are reported at \$19.50. Ordinary lots are offered at lower prices, say, \$18.50 @ \$19, but we do not hear of any important transactions. We quote: \$18.50 @ \$19.50, according to quality and terms of settlement.

**Scrap Iron.**—The market is very dull, and only selected lots can be placed at outside figures, inferior being neglected and slow of sale. We quote: Cast, \$14 @ \$15; Wrought, \$20 @ \$22.

**Nails.**—The market continues in the same dull and demoralized condition as reported last week. Standard brands are held, nominally, at \$2.25, but other descriptions have been offered at considerably lower prices.

## PITTSBURGH.

Office of The Iron Age, 77 Fourth Avenue, Pittsburgh, Pa., Aug. 6, 1878.

There has been nothing particularly new developed during the past week, with the exception of an increased volume of business in Pig Iron, which is regarded as a precursor of more activity in Iron circles before long. While general business is light—remarkably so for the season—a better and more hopeful feeling prevails here. There have been no failures of any consequence for several weeks, and it is believed that there will be no more—that is, of any significance. Pittsburgh has had her full share of bankruptcies during the past two or three years, a good many of which would not stand a very close investigation, and the "crookedness" thus developed has so weakened confidence that business has been very much curtailed thereby. Our merchants and manufacturers have suffered so severely—some of them almost ruined through the rashness of others—that they are now refusing to credit any except those about whose ability and integrity there is no doubt. With confidence more fully restored general business will improve. Stocks of goods of all kinds are very much reduced, both in hands of jobbers and consumers, and with confidence even partially restored an increased consumption is sure to follow. It is also worthy of notice that in consequence of the failure of so many firms the production of manufactured goods will be comparatively light for a year or more to come, and this is also one of the encouraging signs of the times. While the crops in some sections have not turned out as well as expected, the yield, take the country through, has been a full average, and the indications are that there will be an export trade sufficient to absorb our surplus of the leading staples.

The sale of the stock of Rees, Graff & Wood drew together on Friday a goodly number of the Iron trade, and it is worthy of notice that the prices obtained were better than expected, and demonstrates, as stated in this report, that hard pan has surely been reached. The goods sold were as follows:

Tons.	Cash.
600 Pig Metal and some 75 tons Metal Scrap, all sold together.....	\$14.35
50 Muck Bar.....	25.50
50 Railroad Track Scrap, per cent.....	58
150 Merchant Bar Iron, per 100 lb.....	1.50
40 Old Bessemer Rails, gross ton.....	23.50
40 Car Metal, gross ton.....	.88
25 Sheet Scrap, per 100 lb.....	.14

**Pig Iron.**—There has been an increased volume of business during the past week, and while prices continue very unsatisfactory to producers, a firmer and more hopeful feeling prevails. Included in the sales reported were the following: 1500 tons (Coke) Gray Forge at \$16, cash, and \$16.50, 4 mos.; 2000 tons (Bituminous Coal Smelted) Neutral at \$17, cash; 200 tons ditto Red Short at \$18, 4 mos.; 200 tons Anthracite at \$16.50, 4 mos. Some holders are asking \$19, 4 mos., for standard brands of Bituminous Coal Smelted, all Lake Superior ore, and your correspondent was informed by a representative of one of our commission firms that they could obtain \$18, 4 mos., for all they had of the kind in question. Charcoal Irons continue very dull, with no prospect of any change for the better, as they are being supplanted by cheaper Irons which, for many purposes, have been discovered by experience to do just as well; indeed, some consumers allege that they would almost as soon have good Coal and Coke Irons at the same price. In regard to Bessemer Iron we have nothing new to report excepting a firmer feeling, and while there have been no sales reported above \$19.50, 4 months, it is intimated that it would be difficult to buy now under \$20, and some furnaces have the hardihood to ask \$21, and even \$22, 4 months. Some furnaces working on Bessemer having become embarrassed recently, they will of course be unable to fill their contracts, and it is expected that there will be some inquiry before long in consequence. It is certain that the events of the past few months have demonstrated very forcibly that Pig Iron has been selling below cost of production, and this being the case, it is not surprising that so many furnaces have blown out, and that furnaces are disposed to demand better prices.

**Manufactured Iron.**—The general position of the market remains much the same as noted in our last report; business continues light for the season, although if our manufacturers were willing to sell below actual cost, they would have no difficulty in filling their order books. We hear occasionally pretty low figures quoted, but recent events have demonstrated pretty conclusively that purchases cannot be made at these very low rates. A dealer reports that he attempted to place an order at 1.50 rates for Bars, 60 days, but, so he informed your correspondent, none of the mills would take under 1.70 rates, and he says they were not very anxious for it at that. Moreover, the purchase of 150 tons by Graff, Bennett & Co., one of our largest and most prominent manufacturing firms, at the Rees, Graff & Wood sale, of which mention is made elsewhere, at 1.50 rates, cash, is pretty conclusive evidence that the margin for profit at 1.70 or 1.80, 60 days, the ruling rates, is by no means large. In view of what has been stated, it is clear, we think, that there is no risk in buying at quotations, and those buyers who are holding back in expectation of buying finished goods at the cost of the raw article will waken up some of these days, we opine, and find that they have made a mistake.

**Nails.**—The special meeting of the Western Nail Association took place here last Wednesday, as reported by telegraph, but contrary to general expectation, no action was taken in regard to prices. It ap-

peared to be the sense of the meeting that it was inexpedient to advance rates at present, as to do so would only increase the trade of Eastern makers at the expense of those of the West; the cost of production is much less in the East than in the West, while in the cost of transportation there is not much difference, and this being the case, it was concluded by the Association to take no action in regard to prices, therefore the market continues in a very unsatisfactory condition, as rates in addition to being unremunerative are irregular, and there is but little prospect at present of any immediate change for the better. While some makers are refusing to sell under \$2.10 rates, \$2, 60 days, appears to be the ruling price.

**Horse and Mule Shoes.**—No change in prices. Juniata brand still quoted in 100 keg lots at \$3 1/2¢ @ \$4 1/2¢.

**Rails.**—Market steady for Steel Rails at \$44 cash, delivered at mill, at which figure we can report a sale of 1000 tons. Steel Billets, \$44; Steel Blooms, \$40; Steel Rail Ends, \$28, all cash, and delivered at mills. Old Iron Rails in light supply and steady. Sales, 600 tons reported at \$20, cash.

**Wrought Iron Pipe.**—The demand continues light for the season, while prices remain unchanged. Discount on Water and Gas Pipe, 60 @ 65%; on Boiler Tubes, 40%; Oil Well Tubing and Casing, net cash.

**Steel.**—There is a fair demand for all the leading grades and specialties, and every indication of a good fall and winter business. We continue to quote at 11¢ @ 13¢ for Tool Steel; 5¢ @ 7¢ for Machinery Steel; 6¢ @ 7¢ for Spring Steel, and 7¢ @ 8¢ for Boiler Plates; the demand for the latter steadily increasing.

**Scrap.**—The market continues dull and prices weak, and while stocks are comparatively light they are ample to supply the demand. We quote:

No. 1 Wrought Scrap, net ton.....	\$21.
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at this point have been inclined to manifest a trifle more firmness, and, upon the whole, are not disposed to make as large concessions upon jobbing lots to foundry men as could have been obtained a fortnight ago. The principal cause of the incipient improvement is the expected decrease of production by the blowing out of more furnaces, together with a slightly better inquiry for manufactured iron. There have been sales of small lots of pig in this market at \$19 @ \$20 for No. 1, \$18 @ \$19 for No. 2. Scotch pig is quoted at \$24 @ \$25. Gray Forge is nominally quoted at \$17 @ \$18. A little more inquiry has been perceptible for Bar Iron in the Boston market. Parties have been looking around a little more than of late, and some fair-sized transactions have taken place upon the basis of our unchanged quotations of \$37.50 @ \$39 for Refined, and \$34 @ \$35 for Bolt. American Iron Rails are firm at \$32 @ \$35 at mill, and a few orders are being placed at these figures. Steel Rails are in good demand, but there are intimations of lower prices having been accepted in recent transactions. This is not on account of any scarcity of business, however, but more the result of competition on a special order. It is said that an Eastern concern offered to sell Rails to a Western road at \$42, at mill, but failed to secure the order, which is understood to have been divided between the North and South Chicago mills at something less than \$44 there, deliveries extending into 1880. This, however, is an exceptional transaction, and is no indication of the condition of the market further than that it shows a feeling of jealousy among sellers which may sometime result in another period of disastrous competition. In the mean time there is a good demand, and with large contracts already on hand there is no reason why prices should be reduced. At all events the market is in sellers' hands, but as they have on former occasions broken prices on themselves, there is no certainty that they will not do it again. We quote \$43 @ \$45 at mills, market steady. Nails continue very dull at unchanged prices. Sheet is selling at 3¢ @ 3½¢ lb. Russia is quiet at 10½¢ @ 11¢. We quote English Spring Steel at 7¢ @ 8¢, gold; 9¢ @ 11¢ for German; 9¢ @ 11¢ for Machinery; 14¢ @ 15¢ for Cast; 10¢ @ 12¢ for Blister; 8¢ for American Spring; 13½¢ @ 14¢ for Cast; 9¢ for Blister; and 8¢ for Machinery. In Plate Iron the only activity in this market is in Tank, which is selling steadily at 2½¢. Boiler Plate is very dull, quoting 2½¢ for No. 1 Charcoal, 2½¢ for No. 1 Shell, and 2½¢ for Flange. Copper continues very dull, and sells in a small way at 16¢ for Ingot, with rumors of still lower prices. For manufacturers we quote: New Sheathing, 24¢ @ 26¢. The outside price rules in small transactions; but large buyers are purchasing at the inside figure. Bolts are quoted at 26¢ @ 28¢. Yellow Metal Sheathing continues very weak, quoting 13¢ for English and 15¢ for American; Yellow Metal Bolts, 18¢ @ 20¢. Lead continues quiet and weak. The Boston Water Board has awarded the contract for supplying 30 tons of Pig Lead to the Boston Lead Company for \$3.40 @ 100 lb. The lowest bid for Pig Lead was \$3.40 @ cwt. and the highest \$3.55. For Lead Pipe the lowest bid was \$3.48 @ cwt. and the highest \$3.70. On account of two similar bids no contract was awarded for Pipe. We quote: Pig, 3½¢ @ 3¾¢, currency; Sheet, 6¢; Pipe, 5¢; Tin-Lined Pipe, 12¢; Bar Lead, 5¢; all of these excepting Pig are subject to the usual trade or 10¢ discount. Antimony is dull and unchanged, with sales of Boston spot lots at 11½¢ @ 11¾¢. Spelter continues firm, and prices tend upward, with little disposition on the part of buyers to sell on the spot at less than 5¢ for 10-ton lots. Tin continues dull and drooping, and Straits continue to weaken. We quote: Straits, 11½¢ @ 11¾¢; Banca, 17½¢ @ 17¾¢; Refined English, 14½¢ @ 14¾¢, gold. We quote Plate: Charcoal, 1 C., \$6 @ \$6.25; Coke, \$5.12½ @ \$5.25; and Terne, \$5.25 @ \$5.50, gold.—Commercial Bulletin.

## CINCINNATI.

Messrs. E. L. HARPER & Co. (successors to Messrs. L. R. HULL & Co.), under date of Aug. 3, write us as follows: No material change in the condition of the market has been developed since our last report. Prices remain unchanged, and the demand, which has been moderate, shows more activity at the close. Stocks are certainly not increasing, and the best grades especially are not in such supply, but what the expected improvement in demand this fall, and the increased firmness on the part of sellers which would probably result from it, might together readily produce reasonable advance. That prices have now touched bottom is apparently generally believed, and this of itself is a long step toward an improvement in the trade.

## HOT-BLAST FOUNDRY.

Hanging Rock C. C. No. 1	\$21.50 @ 22.00
" " " " " " " "	20.00 @ 20.50
Alice, No. 1, Extra, I. M.	21.00 @ 21.50
" " " " " " " "	20.00 @ 20.50
" " " " " " " "	19.50 @ 20.00
Hanging Rock Coke and S. C. No. 1	18.00 @ 18.50
" " " " " " " "	17.00 @ 17.50
Virginia Coke, No. 1	19.00 @ 19.50
" " " " " " " "	18.00 @ 18.50
Shawnee S. C. No. 1	18.50 @ 19.00
" " " " " " " "	17.50 @ 18.00
Hocking Valley S. C. No. 1	18.50 @ 19.00
" " " " " " " "	17.50 @ 18.00

## LOUISVILLE.

Messrs. GEO. H. HULL & Co., under date of Aug. 5, write us as follows: There is more inquiry for iron, but the wide difference in the views of buyers and sellers has prevented any considerable increase in sales. Consumers have still expected further concessions on each purchase, but the needy holders are pretty well sold out, and furnace-men are either holding firm at last month's prices or asking some advance. Which will ultimately yield is uncertain, but the state of affairs noted looks favorable to the pro-

ducers, as we have not seen so much firmness on their part for a long time. The usual time, 4 months, allowed on quotations below:

No. 1 Hanging Rock, Charcoal	\$20.00 @ 21.00
No. 2 " " " "	18.00 @ 19.00
No. 1 Southern, Charcoal	18.00 @ 19.00
No. 2 " " " "	17.00 @ 18.00
No. 1 Hanging Rock, Stonecoal	19.00 @ 20.00
No. 2 " " " "	18.00 @ 19.00
No. 1 Hanging Rock, Stonecoal and Coke	17.00 @ 18.00
No. 2 " " " "	16.00 @ 17.00
No. 1 Southern, Stonecoal and Coke	17.00 @ 18.00
No. 2 " " " "	16.00 @ 17.00
" American Scotch "	17.00 @ 18.00
Silver Gray	15.00 @ 16.00

No. 1 Charcoal, Cold-short and Neut'l	16.00 @ 16.50
No. 2 " " " "	15.00 @ 15.50
No. 1 Stonecoal and Coke, Cold-short and Neut'l	16.00 @ 16.50
No. 2 " " " "	15.00 @ 15.50
No. 1 Missouri and Indiana Red-short	20.00 @ 21.00
No. 2 " " " "	19.00 @ 20.00
White and Mottled, Cold-short and Neut'l	13.00 @ 14.00

Hanging Rock, Cold-blast	28.00 @ 30.00
Alabama and Georgia, Cold-blast	26.00 @ 28.00
Kentucky, Cold-blast	24.00 @ 26.00

Messrs. W. B. BELKNAP & Co., Iron and Steel merchants, Louisville, Ky., under date of Aug. 5, report a fair miscellaneous trade for the season. The indications continue good for an excellent fall business. The presence of the yellow fever on the Gulf coast, and stringent quarantine regulations, will go far, however, to diminish and retard transactions with the extreme South. Prices are very firm, except for Nails, and mills everywhere are beginning to manifest an unprecedented amount of back-bone. No special change to note.

## RICHMOND.

Mr. ASA SNYDER, Iron Merchant and Furnace Agent, Richmond, Va., writes as follows under date of Aug. 5: I can report a more active market for Pig Iron and Old Rails. Sales of considerable importance have been made on the basis of the following quotations:

American Scotch Pig Iron	\$23.00 @ 23.00
Anthracite, No. 1	19.00 @ 20.00
" " " " " " " "	18.00 @ 19.00
" " " " " " " "	17.00 @ 18.00
" " " " " " " "	16.00 @ 17.00
Coke, No. 1	18.00 @ 19.00
" " " " " " " "	17.00 @ 18.00
" " " " " " " "	16.00 @ 17.00
Ya. Cold-blast Charcoal, Cold-short	20.00 @ 23.00
Ya. " " " " " " " "	19.00 @ 22.00
Ya. Warm-blast " " " "	18.00 @ 21.00
Ya. " " " " " " " "	17.00 @ 20.00
Old Rails	16.00 @ 17.00
Wrought Scrap No. 1	17.00 @ 18.00
Cast (machinery)	19.00 @ 20.00
Richmond Refined Bar Iron	20.00 @ 21.00
Cast (machinery)	22.00 @ 23.00
Horse Shoes per keg	4.25 @ 4.50
Mule	5.50 @ 6.00
Old Dominion Nails, Standard Size, ½	3.40 @ 3.50
Freights to Philadelphia, \$1.40 per ton of 2400 lb.	
Freights to New York, \$1.60 per ton of 2400 lb.	

## BALTIMORE.

Mr. W. N. WYETH, Iron and Steel Merchant, 46 and 48 South Charles street, reports us the following prices, under date of Aug. 5: Trade rules about the same as last reported, and prices continue firm and unchanged, with the exception of Horse and Mule Shoes, which have advanced 25 cents per keg.

Refined Bar Iron, 1 to 6 wide by ¾	\$1.85 @ 2.00
Refined Bar Iron, 1 to 4½ wide by ¾	1.85 @ 2.00
Refined Bar Iron, ¾ to 2, Round	1.85 @ 2.00
Hoop and, 1½ wide and up	2.50 @ 2.75
Band Iron, from 1½ to 4 in. wide	3.00 @ 3.25
Horse-shoe Iron	3.00 @ 3.25
Norway Nail Rods	4.00 @ 4.25
Black Diamond Cast Steel, Plate, Squares and Octagons, ordinary sizes	13 @ 14
Machinery Steel	8 @ 10
Cast Spring Steel	6 @ 6½
Homogeneous Steel Plate	7 @ 7½
Common Horse Nails	7 @ 7½
R. R. Spikes, 5½x16	2.75 @ 2.85
Perkins' Horse shoes, ¾ keg of 100 lbs.	3.62½ @ 3.75
Mule shoes	4.00 @ 4.25
Putnam Horse Nails	10 @ 12
Globe Horse Nails	18 @ 20
Less list discount to the trade	

Messrs. R. C. HOFFMAN & Co., Iron and Commission Merchants, No. 23 South Frederick street, report the Pig Iron market as follows, under date of Aug. 5: Below we quote you present prices of Pig Iron and Blooms, with light demand.

Baltimore Charcoal Pig	\$26.00 @ 28.00
Virginia " " " "	26.00 @ 28.00
Anthracite No. 1	18.00 @ 19.00
" " " " " " " "	17.00 @ 18.00
" " " " " " " "	16.00 @ 17.00
Charcoal, C. B. Blooms	30.00 @ 32.00
" " " " " " " "	28.00 @ 30.00
Refined Blooms	43.00 @ 45.00

## FOREIGN.

## FRANCE.

(Moniteur des Interets Matériels.)

Paris, July 21, 1878.—Metals.—The custom house statistics have just been published. The imports into France during the six months show an excess of about 310,000,000 francs over the corresponding period of 1877, and the export decrease of about 110,000,000 francs. In some manufacturing districts greater activity is shown, but business in general is not brisk. A month will probably have to pass ere much of an improvement can be expected. The strikes in the Anzin region at first made a bad impression, but not much importance is attached to them now. Copper.—The market has been very quiet here, and a partial decline of 2.50 francs has taken place. We quote first brands, Chili Bars, deliverable at Havre, 160 francs the 100 kilos; Common ditto, 160; Ingots and Slabs, 170; Best Selected, 175, and pure Corocoro Ore, 175. Havre quotes best brands Chili Bars, 167.50 @ 168.75, Paris conditions; good current ditto, 160, and Lota and Urmeneta, 165. Marseilles is quiet and unchanged, as follows: Spanish, in slabs, 160; Red Tokat, 155; small Refined Ingots, 175 @ 180; Sheathing, 190; Bolts, 195, and Yellow Metal Sheathing, 187.50. Tin has been quiet here with a downward tendency. We quote Banca, 177.50 francs the 100 kilos; Biliton, 168.75; Straits and Australian, 166.25, all deliverable at Havre or Paris, and English at Havre or Rouen, 165. At Marseilles but a limited business is reported. They quote Straits, 165; Banca, 180; Biliton, 167.50, and English, 175. Lead.—The market is in a languishing condition here, but without change. We quote the various sorts deliverable at Havre, 43, and at Paris, 42.50. First Fusion, soft Spanish, has been selling at Havre at 42 francs the 100 kilos. No change is advised from Marseilles. They quote First Fusion Soft, 40 @ 40.50; Second Fusion, 39; Argentiferous, 41 @ 41.50; Sheet and Tubes, 45, and Shot, 43. Spelter.—Block Zinc is firm; sheet ditto has declined. We quote: Silesian at Havre, 47.50 francs the 100 kilos; other good brands at Havre, 46.50, and at Paris, 47.50. Vieille Montagne Sheet has been reduced to 50 @ 60. Silesian is quoted at Havre, 47.50. Marseilles is weak; they quote Sheet Zinc, 38 @ 40, less 5, and Old Remelted, 40. Iron.—The Anzin strikes have cast a gloom over the entire situation. Although we believe they will be short lived, and that the destruction of property on a large scale

will be prevented by the intervention of the military, they give room for reflection; and in view of these disturbances and the possibility of other similar ones occurring elsewhere in France, people will abstain for a while from all engagements ahead, and the dull feeling to which we have alluded in previous reviews is deepened. The wages insisted upon are 5 francs per day and a reduction of working hours to eight. The Anzin Company, it would seem, was unable to renew its contract for Coal in brick form with the Northern Railroad of France, and was, therefore, compelled to discharge temporarily 2000 men. This started the difficulty, the men being determined to create a disturbance, and they have succeeded in seducing those that remained in employ into raising their demands. Coal, in consequence of these troubles, has also been less dealt in, and a week or a fortnight will elapse ere everything is settled and business returns to a normal condition in the Coal and Iron regions of the republic. At all events, we have had a timely warning that we shall have to be prepared for labor troubles from now forward.

## BELGIUM.

(Revue Universelle.)

BRUSSELS, July 21, 1878.—Iron.—There has been no improvement in the general situation, nor do matters look any worse than they did the previous week. There is a steady inflow of orders. This is something, at least; they are small ones, it is true, but then the times are dull, and on large bargains the competition from abroad is great. The conclusion of peace in the East can hardly fail to bring us Belgians some business. Several agents from Roumania are traveling in Belgium for the purpose of obtaining the representation of Belgian Ironmasters in that locality. The Belgian government will receive tenders for some 124 passenger and 23 minor railroad cars on the 24th inst. Some brass work adjudications, also for the State, will come up Aug. 1. Coal.—The situation is becoming more difficult. A good many Coal mines in Belgium perceive that their stocks accumulate fast, and that there is no prospect apparent to rid themselves of the surplus thus gathering on their hands. A good many managers have consequently resolved to reduce the number of working days per week. The beet-root sugar houses of Belgium have no means yet of determining whether the crop will be large or an average one, or whether it will fall short of estimates. They will consequently stir in laying in any extra supply of Coal ahead, and the only branch of industry which can be relied upon for the time being is the metallurgical. This sufficiently explains the dullness from which we are suffering.

## HOLLAND.

(Koch & Vrielboom.)

ROTTERDAM, July 23, 1878.—Tin.—The market has become very quiet at nominal 39.25 guilders @ 50 kilos for the Billiton, owing on the one hand to the nearness of the government sale, and on the other to the accounts from Australia, which are of a nature to demoralize the Tin markets even more if possible than they have been hitherto.

## Our English Letter.

Review of the British Iron, Steel, Metal and Hardware Trades.

(From our Regular Correspondent.)

LONDON, ENG., July 22, 1878.

## THE HEAT

of the past week has been tremendous and almost unprecedented, last Wednesday and Thursday's figures being 149° in vacuo, or within 1° of the highest point ever reached, which was registered during the summer of 1866. The height of the thermometer is noteworthy of itself, but has more interest collaterally, inasmuch as it has practically stopped iron making in the earlier processes during the day time.

## IN PARIS

I hear the effects of this fierceness on the part of old Sol is having even more decided effects than here, yet one observes records from day to day of the enormous number of arrivals in the gay capital from all parts of the world, and especially from England and America.

## THIS WEEK

the long-expected trials of mowers and reapers in connection with and in competition for the prizes offered at the Exposition, will take place. Virtually they commence today, and will not be finished for several days—perhaps the whole week. The larger British manufacturers have been in great doubt as to whether they should or should not compete. At Bristol they held several meetings on the subject, and at first decided to hold entirely aloof. A subsequent want of unanimity, however, seems to have upset this resolution, and, as I have stated, the trials are now in hand. Your able friend and colleague

## MR. JOS. D. WEEKS

was in London last week, on the return journey from Paris, where he has been "taking notes" of the exhibits, and of certain other matters of which your readers will doubtless hear in due course. Mr. Weeks sailed in the Cunard boat Russia on Saturday. Mr. B. C. Lauth, who is apparently entirely and absolutely restless in his "wanderings to and fro" has also been in London during the past few days. I don't want to disclose secrets prematurely, and so spoil Mr. Weeks' programme, but I may, I think, venture to prophesy that in one particular branch of manufacture, at least, he has seen plant and "fixins," which he will readily concede "lick creation." To those who have followed my series of letters to this journal for so many years past I need say little more to add zest to the expectation with which they will await what your collaborator has to tell them. In other respects I should not be surprised if Mr. Weeks has a widely different report to make—highly complimentary to the energy and marked mechanical progress made on your side. In either eventuality all such comparisons, when penned by a hand accustomed to the work and thought out by brains trained to accurate knowledge of the subjects in hand, are of immense service on both sides of the water. Both nations can bear to be told of their many faults and deficiencies, and both will, I have no doubt, be eager to benefit by impartial criticisms. We have all a good deal to learn yet!

## THE PEACE

which has been arrived at has afforded a real, substantial and most welcome relief to all classes of manufacturers, merchants and other commercial men. The long strain of the past two or three years had become excessively burdensome and perilous—as is shown by the current failures in Staffordshire—so that the disposal of the Eastern question and the almost certain revival of trade have come just in the nick of time. There has not, as yet, been time to get a clear turn round, but already we hear of a

palpable impetus being given to a variety of enterprises which had long been suspended, and the pent-up activity of capitalists is again "breaking out" in the shape of new undertakings. The acquisition of Cyprus and the British protectorate of Asia Minor afford openings for many new harbor, railway and other schemes, the development of which is certain to benefit trade and manufactures generally. At home, according to the Ironmonger (which, by-the-by, has rapidly become the leading organ of the iron, hardware and agricultural implement interests since its publication weekly) there is much activity in the railway world, many new orders having just been given out for rails, &c., while other large foreign and colonial contracts are being negotiated. Bolckow, Vaughan & Co., of Middlesboro', have recently been notably successful in all the steel rail competitions, their plant and facilities being ahead of all the world. Their books are, consequently, well filled. Sections of 70 to 80 pounds to the yard can be had, in large lots, at £5. 10/ @ £5. 12/6, f. o. b., and light sections at a little more money. At Sheffield and in South Wales a great deal of Bessemer steel is being sold for general purposes, sheets of that material having a particularly good sale for a host of purposes for which iron was formerly solely used.

## SCOTCH PIG IRON

has partaken of the improved state of feeling in the country, and is in somewhat better request all round, although 400 tons have been added to Connal's stock, making the total quantity now held there 182,502 tons, against 146,291 tons same date last year. There are now 96 furnaces in blast in Scotland, against 107 July 22 last year. Messrs. J. E. Swan & Bros. report a total decrease in this year's shipments amounting to 39,788 tons, much of the drop being foreign. There has, on the other hand, been an increase in the imports of Middlesboro' pig of 4569 tons this year.

Writing from Glasgow July 20, James Watson & Co., said: "There has been a better feeling in the Scotch pig iron market during the past week and the price of warrants has advanced a little, but makers' quotations are almost unchanged. On Tuesday the market was steady at 49/7, cash, on Wednesday forenoon it advanced from 49/7½ to 49/9 ½ ton, closing a shade easier at 49/8 ½ ton. Yesterday, business was done from 49/7½ to 49/9, cash, and to-day it has further improved to 49/11 ½ ton, closing sellers at 49/10½, cash, prompt, buyers very near." Shipments last week were 7151 tons against 7472 tons in the corresponding week of 1877. We quote:

	No. 1.	No. 2.
G. M. B., at Glasgow	49/6	48/6
Gartsherrie, "	57/3	57/3
Coltness, "	56/6	54/6
Summerlee, "	55/6	55/6
Langloan, "	58/	51/6
Carnbroe, "	50/9	49/3
Calder, at Port Dundas	56/3	49/
Glenarnock, at Ardrossan	55/6	51/
Eginton, "	50/6	49/6
Dalmellington, "	50/6	49/6
Shotts, at Leith	58/	55/6
Kinnell, at Bo'ness	51/	51/

The figures of Wm. Colvin & Co. are similar.

Included in last week's shipments from the Clyde were: From Glasgow, Quebec and Montreal, 19 tons wrought-iron tubes, £244; 62½ tons iron castings, £330; 142½ tons bar iron, £1121; Montreal—19½ tons bar iron, £190. Calcutta—Machinery, £4348; 3¼ tons wrought-iron rivets, £56; 2 tons unenumerated iron, £34; ¾ ton wrought-iron tubes, £16; 1½ tons iron castings, £43; bolts and nuts, £65; 1 iron shaft, £38; 88 tons wrought-iron work, £1700; 5½ tons galvanized iron, £96. Mediterranean—174 tons iron castings, £920; sewing machines, £1850; 2 tons hoop iron, £20; unenumerated iron manufactures, £20; 1½ tons bar iron, 10/; 4¼ tons wrought-iron tubes, £70; machinery, £19. Antwerp—Sewing machines, £530. New York—Machinery, £7. The amount of manufactured iron exported from Glasgow last week was: Bar, 163½ tons; hoop, 2 tons; wrought, 115½ tons; total, 280½ tons; same period last year, 1018½ tons. From Grangemouth: Rendsburg—5 tons gas pipes. Rotterdam—Iron castings, £58.

## THE TRADE OF CLEVELAND

is on a pretty fair scale, the exports of pig iron and last week having reached 17,000 tons, and of manufactured iron nearly 2000 tons. Bolckow, Vaughan & Co. are now rolling 1300 tons of steel rails weekly. Last week they shipped 1000 tons to Civita Vecchia, besides several smaller lots to Scotland and elsewhere. At this vast establishment still further economies are being effected by laying down new rolls on a principle which will save time in changing. In the face of this it is a somewhat noteworthy fact that new Belgian rails are being imported for the Newcastle tramways at prices—10/ per ton—below the local quotations.

ADVANCING IRONWORKERS' WAGES would not, one would suppose, be in vogue just now, yet as I write a telegram is issued which states that Mr. Robert Heath, "the greatest individual ironmaster in Great Britain," has advanced the wages of all his colliers and ironworkers to the extent of 10 per cent. The telegram says: "It is believed Mr. Heath has some very large orders on hand." Now, I do not desire to be unjust or ungenerous, but I am compelled to the admission that I should have more faith did not the announcement commence by styling Mr. Heath "the senior conservative member for North Staffordshire." That "sort o'" explains the thing to me. Such is life!

## FROM SHEFFIELD

I have no particular news as to the general aspects of the iron, steel and hardware industries. In all directions there is more hope and more energy than for many months past—I might almost say for years. The iron-works are not fully, but are fairly engaged—a remark which also applies to the leading steel manufacturers. The Bessemer works are tolerably employed, some of them having recently turned out very considerable lots of forgings for the use of rolling mills and other purposes. Rails are in steady request, and are not unlikely to become dearer before long. Acaster's rail joint is steadily progressing, and is being adopted on many of the leading home and Continental lines. Two or three sections have been in actual use on heavy pieces of road on the

Midland system for nearly twelve months, and have in all respects withstood wear and tear as well as weather. This joint has now been acquired by a wealthy and influential body of Sheffield gentlemen, the inventor being retained as practical manager. He is an engineer by business, and "knows his way about pretty well." In the cutlery and file branches there is a steady amount of business doing, and an increased turnover in electroplate, reaper knives and sections, &c.

## THE IRON AND STEEL INSTITUTE'S

autumnal meeting will take place in Paris. The preliminary programme of the arrangements runs thus: Monday, September 16th, 9 a. m. to 12 noon: General meeting of members, when the president, Dr. Siemens, will deliver an address, and papers will be read and discussed. Tuesday, September 17th, 9 a. m. to 12 noon: General meeting of members for the reading and discussion of papers; 7 p. m.: Annual dinner of the Institute. Wednesday, September 18th, 9 a. m. to 12 noon: Concluding general meeting of members for the reading and discussion of papers. Thursday and Friday, September 19th and 20th: Excursions to such iron works in France as will be open to the inspection of members. Believing that members would prefer to have the afternoons of the 16th, 17th and 18th, left entirely at their own disposal, for visiting the Exhibition, &c., the council have judged it advisable to avoid making any arrangements that would interfere with this freedom. The council have already arranged for the following papers: By the president, Introductory Address; by Prof. Jordan, Paris, "On the Iron Ore Resources of France;" by Prof. Akerman, Stockholm, "On the Present State of the Iron and Steel Manufacture, as judged from the Paris Exhibition;" by Monsieur Euverte, Terre-Neire, "On Homogeneous Steel;" by J. S. Perissé, Paris, "On the New Ponsard Gas Furnace;" by Mr. Daniel Adamson, Hyde Junction, Manchester, "On the Mechanical Properties of Soft Steel." Several other promised papers are still under consideration.

## IN STAFFORDSHIRE

the iron trade grows worse instead of better, if one may judge from recent failures. These include that of H. B. Whitehouse & Co., of Deepfield, owing £96,000; Mr. Carmi Rollason, Sedgely, owing £21,000; and Mr. Samuel Hopkins, Dudley Port, owing £11,450. These stoppages would seem to indicate "something rotten in the State of Denmark," and demonstrate the long-suspected fact that not a few houses in Staffordshire have been making and selling iron at a positive loss—a course that can only end in one way. Nevertheless, we hear of rather more activity in some branches of the trade and an attendant firmness of prices. The galvanized sheet manufacturers are doing moderately well for New Zealand, the Cape and Australia. Most of the leading hardware trades are tolerably well engaged, although it cannot be said that any of them are really busy.

## SPANISH PROTECTION

is now rising as a sort of specter to increase the weight of affliction already pressing upon the British exporter. England trades with Spain as a non-favored nation, so that Spain allows the war tax to be retained on British iron, &c., while taking it off the same goods of German, Belgian, &c., manufacture, which makes a difference of 4/ per ton in pig iron, 12/ in iron rails, 31/ in hoop iron, 21/ in wire and 26/ in tin plates—in our dis-favor.

FROM SOUTH WALES AND MONMOUTHSHIRE there were shipped last week foreignwre over 3000 tons of iron and steel. Of this total 2052 tons went from Cardiff, 1060 tons of rails to Vera Cruz, 70 tons to Bilbao, 438 tons to Gambley, and 58 tons to New York (from Rhymney); 330 tons of bars to New York by Mr. Y. N. Edwards, and 96 tons of wire to New York from the same consignee. There were imported into Cardiff 9390 tons of iron ores, and into Newport 8725 tons. From the latter port the foreign shipments of iron reached 1188 tons.

## THE METAL MARKETS

have been quietly firm during the week, but there has not, so far, been any marked increase in the amount of business done. The Ironmonger says: "Copper remains quiet, 510 tons of Cape ore, by tender, at 12/1½ per cent. per unit, for 31 per cent. produce, being the only sale of furnace material which has taken place. The demand for Chili bars has been limited, and prices have again ruled in buyers' favor. A few hundred tons have been sold, good ordinary to common brands at £63. 10/ @ £62. 10/, cash, and at £64. 5/ @ £63. 10/, with 3 months' prompt, the market closing at £62. 5/ @ £62. 10/ for good ordinary brands. Australian is quoted rather easier: Burra, £71, and Wallaroo, £73. 10/ @ £73. 15/. English is lower: Tough, £68 @ £69; best selected, £69. 10/ @ £70. 10/; strong sheets, £74. Tin has continued quiet.



## Colorado as a Place to Settle in.

A correspondent writing from South Park, Colorado, says:

Business throughout the Centennial State is and has been exceedingly slow for the past five or six months, but there is strong prospect of a revival in the near future. The business of the State is principally stock and mining, but in the cities and towns some extensive mercantile houses drive a large, and I dare say a lucrative business. There is certainly a sad mistake made by many in coming to the West to better their condition financially. Already the country is over-run with men and women out of employment, and still they come. To settle in the West a man needs considerable grit and sinew, besides money sufficient to (as they term it here) grub him while prospecting for a permanent settlement. Without money in this country a man has but one of two expedients to choose from—work upon a farming rancho, or the life of a herder upon a cow or sheep rancho, or a return trip to the East, where there is, I believe, more work in a day than there is here in a week.

The mines of Leadville, Boulder, San Juan, Georgetown, Breckenridge, Hamilton,

Golden and others are the greatest attraction to new comers. They flock to them, and in many cases succeed in finding that which we are now so eager to handle, "the filthy lucre." Wages in a new mining camp are in proportion to the price of provisions, \$3 and \$4 per day, while flour is worth often as high as \$15 to \$20 per cwt. Leadville is the attraction now, and some very rich leads have been found, one of which I know where the finder sunk his shaft but three feet and refused \$20,000 for a one-third interest. Several partially developed mines have been sold for from \$25,000 to \$75,000. Flood and O'Brien, of California and Nevada, through their agents, gobble up everything in the shape of a mine they can buy, and I would not be surprised to hear of them yet controlling the entire camp.

To those who think of coming to Colorado a word of advice from one who has seen it and yet sees it every day. If you have money, come. If you have not, stay where you are till you get some, and then make your start in the spring, being prepared to rough it from the start. You cannot live on air nor scenery, and it takes money to get anything else. This is the place for thousands yet, but there is not labor for

all for wages, but you can prospect for yourself to your heart's content for gold, and will find thousands of acres of farming land waiting for you to break soil and irrigate. The rainfall is far from being sufficient to water the crops, and by irrigating alone you can make your crops yield as you desire.

Last year's revenue of the German Central Exchequer was 15,000,000 marks below the estimate. All branches of the customs and excise suffered from the continued depression of trade. The deficit is covered by savings from the French indemnity. The forthcoming meeting at Heidelberg of the finance ministers of the several German states is intended to pave the way for an increase of revenue. The discussions will cover the subject of excise and kindred topics. Herr Hobrecht, the Prussian Minister of Finance, is said to have devised a plan for a rapid increase of indirect taxation.

The Maryland and Delaware Railroad will hereafter be known as the "Delaware and Chesapeake."

## THE LANGDON MITRE BOX COMPANY,

Millers

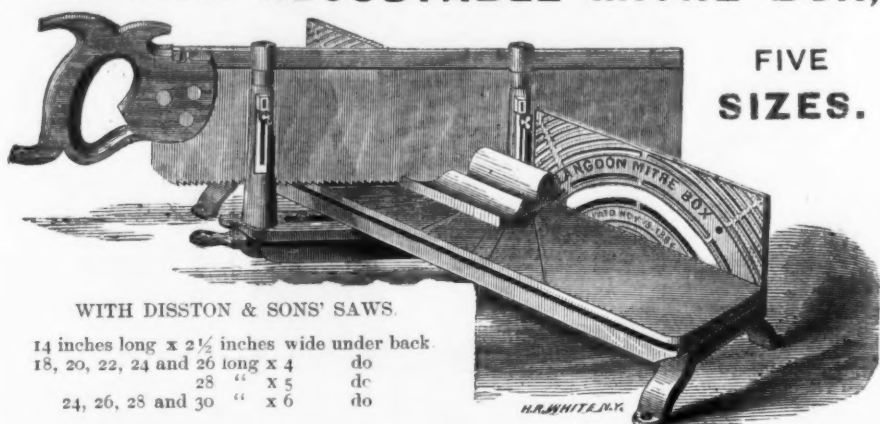
Falls, Mass.,



Sole Owners and Manufacturers of the

## LANGDON ADJUSTABLE MITRE BOX,

FIVE SIZES.



WITH DISSTON &amp; SONS' SAWS.

14 inches long x 2 1/2 inches wide under back	
18, 20, 22, 24 and 26 long x 4	do
28 " x 5	do
24, 26, 28 and 30 " x 6	do

Illustrated circulars  
All parts of each size made to interchange.  
(issue 1877) sent when desired.

Dealers wishing  
Five sizes of Mitre Boxes. Eleven sizes of Saws.  
to advertise furnished with electrotypes without cost.

## EXCELSIOR WRINGERS



The only wringers that conduct the water into either tub, without being changed from one tub to the other.

They wring from either tub into the other, right or left, with equal facility. Warranted to work as represented.

## FOR STATIONARY TUBS.

They are made for use on square tubs, such as are principally used in cities, and are the only wringers especially adapted for that purpose.

Send for an illustrated price list to the manufacturers,  
**BAILEY WRINGING MACHINE CO.,**  
No. 99 Chambers Street, New York.

ALSO MANUFACTURERS' AGENTS FOR

Defiance Metallic Planes, Simpson's Adjustable Vises, American Meat Choppers,  
Silver's Stuffers and Presses, Domestic Ironing Mangles.

SPECIAL QUOTATIONS ON THE ABOVE GOODS FOR EXPORT.

## W. R. OSTRANDER,

Manufacturer of

## Patent Speaking Tube Whistles,

SPEAKING TUBES, BELL TUBES, MOUTHPIECES, &amp;c.

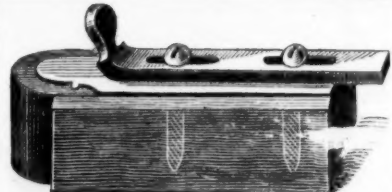
Best Mangles' Fixtures.  
Speaking Tubes fitted up and warranted. Prices and catalogues on application. Metal Spinning.  
19 Ann St., near Broadway, New York.

## SPECIAL NOTICE.

The undersigned, in view of the Paris Exhibition of 1878, begs to inform his friends that he continues to make translations of Catalogues, Prices-current, Circulars, Correspondence, &c., from and into the

ENGLISH,  
FRENCH,  
GERMAN  
and SPANISH,

and that he bestows special attention upon a strictly correct rendering of **Technical Expressions** in matters relating to **Machinery, Metallurgy, Hydraulics, &c.** The very best reference will be furnished from leading manufacturers in this city, Philadelphia and elsewhere, for whom he has translated. If desired, estimates will be procured for the setting up, electrotyping and printing of catalogues, &c., in the above languages.  
**C. KIRCHHOFF,**  
Metal Reporter of The Iron Age,  
83 Reade St., New York.



## Hyatt's Patent Slot Bolt.

Patented Jan. 29th, 1878.

For Fastening Window Screens, Cabinet Ware, &amp;c

We call the attention of the trade to these Wrought Brass Bolts as being the best and cheapest in the market. Sizes, two inches and upward, both plain and neck bolts. Two screws (as shown in the cut) fasten the bolt and bed-plate to the wood; no others are required, thus effecting a great saving in screws and producing a strong, handsome and cheap Bolt. Price list furnished on application.

**BRASS GOODS MFG. CO.,**  
Sole Manufacturers, 280 Pearl St., New York.

We also manufacture all kinds of Brass Goods, Plate Escutcheons, Drop Bases, Thumb: for Door Knobs, Brass Label, Patent Mirror Business Cards, &c.

**CHAS. E. LITTLE, 59 Fulton St., N. Y.**

1760.

Solid Cast Steel Augers & Reamers.

For Boring PUMP LOGS. All sizes in stock. Socket Shanks, Ring Handles, and Connecting Rods for the above to order. Also Tensioning Tools for joining log ends. Coopers' and Slaters' Tools, Tool Chests. Tools for all trades a specialty.

## NATIONAL Horse Nail Co.

MANUFACTURERS OF

## FINISHED

(BRIGHT OR BLUED)



These nails are made of the best brands of **NORWAY IRON**, and are guaranteed to be equal to any in the market.

## NATIONAL HORSE NAIL CO.,

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**HORACE DURRIE & CO., Agents,**  
No. 97 Chambers St., New York

## PUTNAM'S

HOT FORGED & HAMMER POINTED  
Horse Shoe Nails.



TRADE MARK.

Made from the best of Norway Iron.  
The only hot forged machine made Horse Shoe Nail in the world that is not sheared or cut on the point. Warranted never to split or silver in the driving, and to hold the shoe longer than any other Nail. For sale by the hardware and iron trade generally.

**PUTNAM NAIL CO.,**  
P. O. Address, Neponset, Mass. **BOSTON**



JAS. CLAYTON.

Water, Air &amp; Vacuum

PUMPS

Air Compressors.

Prices greatly reduced

Send for circulars.

11 &amp; 16 Water St.,

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## TACKLE BLOCKS

BURR &amp; CO.,

Manufacturers of Waterman and Russel's

Patent Iron Strapped Blocks.

Also, Manufacturers of

ROPE STRAPPED BLOCKS.

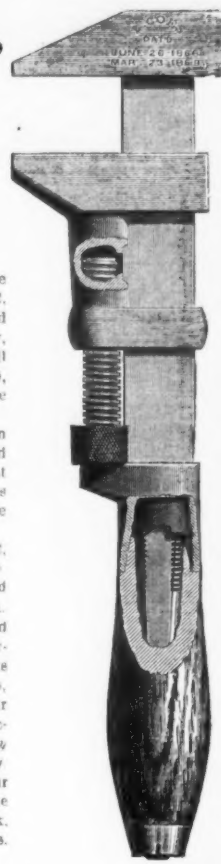
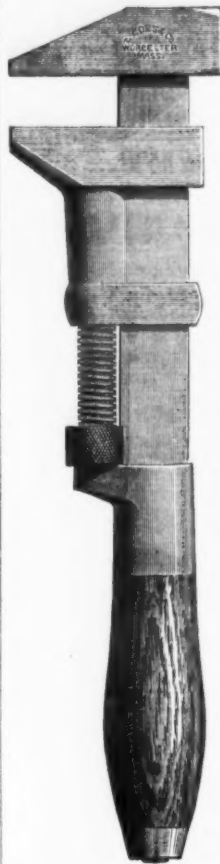
31 Peck Slip, New York.

## L. COES' Genuine Improved Patent SCREW WRENCHES.

Manufactured by

L. COES &amp; CO.,

Worcester, Mass.



We invite the particular attention of the trade to our New Straight Bar Wrench, widened, full size of the larger part of the so called "reinforced or jag bar." Also our enlarged jaw, made with ribs on the inside, having a full bearing on the front of bar (see sectional view), making the jaw fully equal to any strain the bar may be subjected to.

These recent improvements in combination with the nut inside the ferrule firmly screwed up flush, against square, solid bearings (that cannot be forced out of place by use), verifies our claim that we are manufacturing the strongest Wrench in the market.

We would also call attention to the fact, that in 1869 we made several important improvements (secured by patents), on the old wrench previously manufactured by L. & A. G. Coes which were at once closely imitated and sold as the *Genuine Wrench* by certain parties who seem to rely upon our improvements to keep up their reputation as manufacturers, and although the fact of their imitating our goods may be good evidence that we manufacture a superior Wrench, we wish the trade may not be deceived on the question of originality. Trusting the trade will fully appreciate our recent efforts, both in improvements on the Wrench and in the adoption of a Trade Mark, we would caution them against imitations. None genuine unless stamped;

"L. COES &amp; CO."

Warehouse, 97 Chambers St., & 81 Reade St., N. Y.  
**HORACE DURRIE & CO., Sole Agents.**



**HORACE DURRIE & CO.,**  
Agents, - - - New York.



ESTABLISHED 1850.

## WM. HASSALL,

Manufacturer of

## American and French Wire Nails

With Flat, Round, Oval, Depressed, Screw and Fancy Heads.

Molding and Finishing Nails, with or without heads. Brush Makers', Upholsterers', Cigar Box, Basket, Chair and Undertakers' Finishing Nails a specialty. Shoe Nails of Brass and Iron. Bright Iron Rivets, Brass and Iron Escutcheon Pins, with flat, round and fancy heads, all sizes on hand and to order.

OFFICE AND WORKS: Nos. 63 &amp; 65 Elizabeth Street, New York.



CHAMPION HOC RINGER RINGS and HOLDER. Only double Ring ever invented. The only Ring that will effectually keep Hogs from rooting. No sharp points in the nose.

Ringers, 75c. Rings, 50c. 100. Holders, 75c. Huskers, 15c.

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EAGLE BRAND CORN HUSKER. Is the best Husker in the market. Farmers say it is the best. Use no other.

Ringers, 75c. Rings, 50c. 100. Holders, 75c. Huskers, 15c.

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BROWN'S HOC RINGER RINGS. Only single Ring in the market that operates on the outside of the nose. No sharp points in the nose to keep it sore.

Ringers, 75c. Rings, 50c. 100. Holders, 75c. Huskers, 15c.

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## JESSOP'S Patent Adjustable Pipe Tongs.

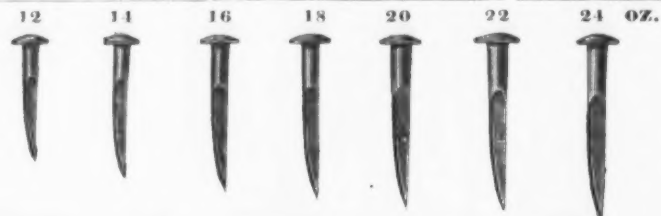


THE BEST IN THE MARKET.

Send for Samples.

EATON, COLE & BURNHAM COMPANY,  
Sole Manufacturers.

58 John Street, New York.



## TACKS.



Swedes Iron, Upholsterers', Gimp & Cut Tacks.

TINNED, LEATHERED AND LARGE HEAD IRON CARPET TACKS.

Trunk, Clout and Finishing Nails, Brads, Patent Brads, &c.

Lining, Saddle and Tufting Nails, Coffin Tacks and Tufting Buttons.

COPPER, ZINC, STEEL, AND SWEDS AND COMMON IRON SHOE NAILS, &c.

Copper, Iron and Galvanized Boat Nails (Regular or Chisel Pointed), Brass and Iron Wire Nails, Moulding Nails and Escutcheon Pins, Chair and Cigar Box Nails, 2d & 3d Fine Nails, Roofing Tacks and Nails, &c., &c.

Made by the AMERICAN TACK CO., Fairhaven, Mass.

A full line of goods may be found at the

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THE CONNECTICUT VALLEY MFG. CO.,

CENTERBROOK, CONN., Manufacturers of

Lewis' Patent Single Twist Spur Bits,



GERMAN GIMLET BITS, etc.

Send for our illustrated price list and discounts.

## McNab & Harlin Mfg. Co., MANUFACTURERS OF BRASS COCKS AND VALVES For STEAM, WATER and GAS.

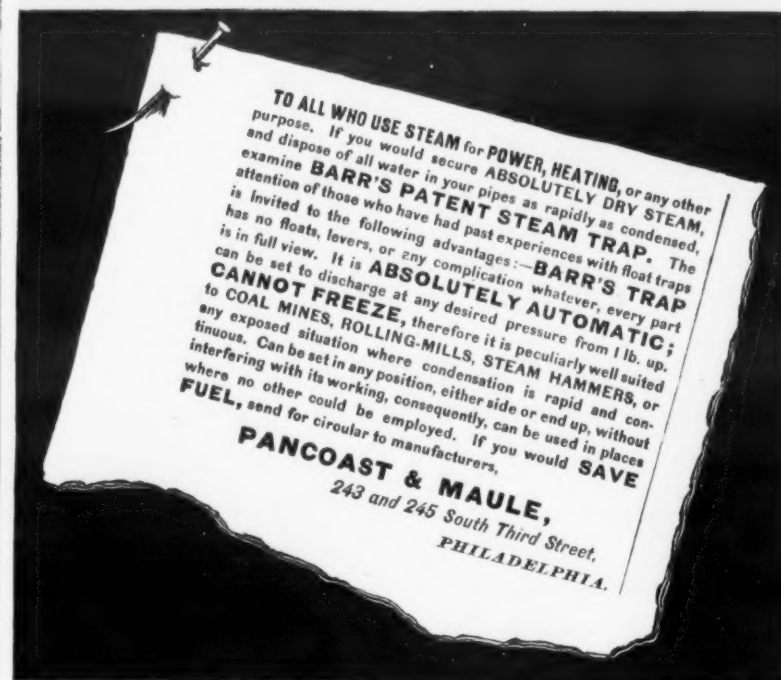
Iron Pipe and Fittings, Plain and Galvanized.

PLUMBERS' MATERIALS.

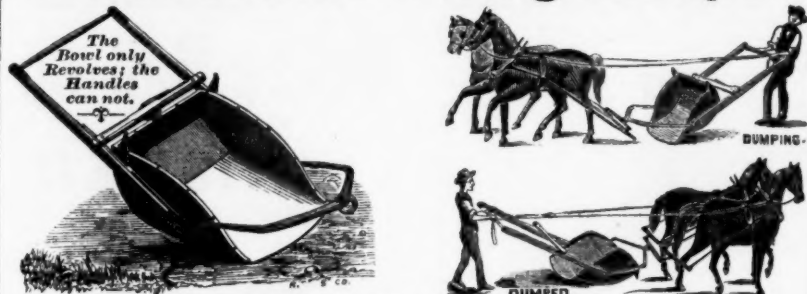
New Illustrated Catalogue and Price List sent by express to the Trade on application.

Factory, Paterson, N. J.

56 John Street N. Y.

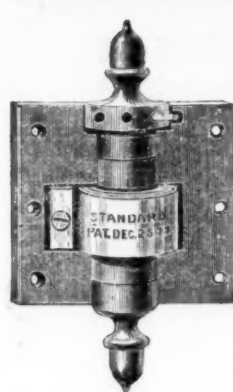


## Automatic Revolving Scraper.



REVOLVING SCRAPER CO. Columbus Ohio.

## MASON MANUFACTURING COMPANY.



Standard Patent  
Spring Hinge.

PRICES.

Single-Acting.

	Per pair.
2x2	\$ .75
2 1/2 x 3 1/2	1.00
3x3	1.50
4x4	2.00
5x5	3.00
6x6	4.00

Discount to the Trade.

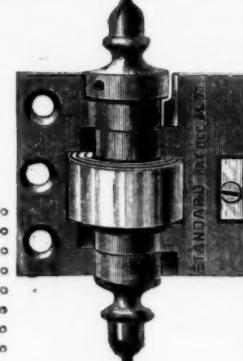


Perfection  
Step Ladder.

PRICES.

3 feet	\$2.50
4 "	3.00
5 "	3.50
6 "	4.00
7 "	4.50
8 "	5.00
9 "	5.50
10 "	6.00

Discount to the Trade.



Standard Patent  
Spring Hinge.

PRICES.

Double-Acting.

	Per pair.
2 1/2 x 3 1/2	\$2.00
3x3	3.00
4x4	4.00
5x5	6.00
6x6	7.00
7x7	8.00

Discount to the Trade.

Manufacturers of Step Ladders, House Furnishing Goods and Jobbers in general Hardware. Send for our Price List.

FACTORY: 418, 419, 450 and 451 West St.

OFFICE: 116 Chambers St., New York.

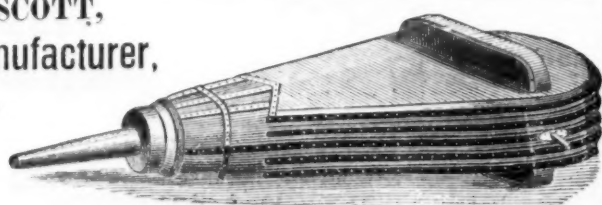


MICROMETER CALIPER,  
Made by THE VICTOR SEWING MACHINE CO.  
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This attractive and very desirable tool will be found more reliable and convenient than the Vernier Caliper, and to Machinists and Tool makers it is indispensable on work requiring very accurate and close measurement. Its capacity is one inch, and is graduated to one thousandths, but can readily be set one-half and quarter thousandths; and is so constructed that any wear resulting from use can be readily adjusted.

GEO. M. SCOTT,  
Bellows Manufacturer,

Johnson Street,  
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## The Magic Carriage & Wagon Jack.

Patented April 23, 1878.

PRICE, - - \$12.00 per doz.

Liberal discount to the trade.

MAGIC JACK CO.

Sole Manufacturers and Proprietors,

MISHAWAKA, IND.

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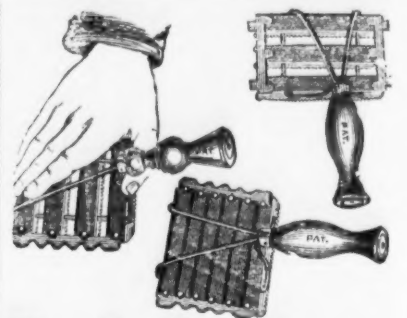
Agents.



Daman  
STANDARD  
HOLLOW AUGERS.

C. C. HARLOW & CO.,  
BRIDGEWATER, MASS.

Manufacturers of DAMAN STANDARD HOLLOW AUGERS—Universally acknowledged superior to any other in the market. They have recently been improved, making them, as now offered to the trade, the most perfect tools of their kind, either in design, material or workmanship. SPOKE AND BOWL THIMBLERS.—The very best as well as the cheapest. METALLIC COMBINATION FLOW PLANE.—Made of solid cast steel and of gun metal. Of an entirely new design. Can be used as Groover, Dado and Rabbit Plane. In any direction of the grain, and also as a Match Plane. COMMON SENSE DOOR SPRING.—The most durable and cheapest Door Spring yet made. LEAD PIPE CUTTERS.—To cut lead pipe in any position and without chips or burrs. Please send for circulars and prices.



## The Perfect Comb.

We call your attention specially to our new patent end-iron wire comb. The result of a long series of experiments, made with a view to meeting all the requirements of a Perfect Comb. It is better, stronger, and more durable than any ever before invented. The raised wire shank gives what has never before been attained, viz: a rest and brace for the thumb, in such a position that the hand cannot come in contact with the horse while using the comb. The wire braces which run from the shank over the back to the front teeth give strength and durability in a direction never heretofore attained, and at the same time serve as an extra handle; and when clasped by the fingers in connection with the raised shank the comb is more firmly held, and completely held, and with much less fatigue to the hand than is possible in any other formation—in short, it needs but a trial to vindicate its name: The Perfect Comb.

THE LAWRENCE COMB CO.

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382 2d Ave., cor. 23d St., N. Y.

WM. S. CARR & CO.

Sole Manufacturers of



CARR'S

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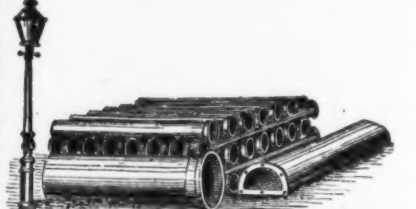
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Closets,

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Manufacturers of

Cast Iron Pipe

FOR WATER AND GAS.

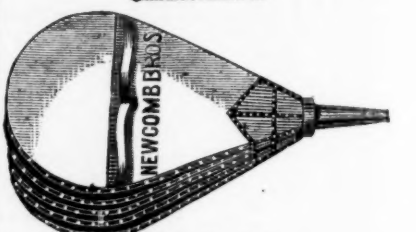
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400 CHESTNUT STREET.

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I invite special at-

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PATENT

Reversible

Nozzle.

These Bellows are well adapted and put up for export trade.

I manufacture all sizes, with or without this improvement.

NEW YORK and BOSTON  
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STORE TRUCKS.

Railroad, Warehouse, Platform and Block Trucks, all sizes.

Manufactured only by

H. N. HUBBARD,  
323 East 22d St., New York.

Reduced prices. Catalogues furnished.



Sole Manufacturers.



<i>Snows, Makers of,</i>	Trenton, N. J. ....	36	<i>Stove Boards, Manufacturers of,</i>		
American Saw Co.,	Trenton, N. J. ....	36	Anselma Brass and Copper Co.,	Is and 1 Cliff, N. Y. ....	37
Boynton, E. M., & Beekman, N. Y. ....	40		Shepard Sidney & Co.,	Buffalo, N. Y. ....	37
Diston Henry & Sons, Phila. ....	43	<i>Stove Pipe,</i>			
Peace & Hogan, Williamsburg, N. Y. ....	36	Shepard Sidney & Co.,	Buffalo, N. Y. ....	37	
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# ZUCKER & LEVETT, NICKEL PLATERS' SUPPLIES.

Estimates for Complete Outfits Furnished.  
639 & 641 West 51st Street, New York.

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## ENTERPRISE Mfg. CO. of PA.

Patented Hardware Manufacturers and Iron Founders,  
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**BURNING & SHAME**



FOR SALE BY THE  
HARDWARE TRADE



**COLD COMFORT**

**SPECIALTIES.**

Enterprise Patent Cold Handle Double Pointed  
SMOOTHING AND POLISHING IRONS,  
CHAMPION TOBACCO CUTTERS,  
PATENT MEASURING FAUCETS,  
SELF-WEIGHING CHEESE KNIVES,  
&c., &c.

**SPECIALTIES.**  
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COFFEE, SPICE AND DRUG MILLS  
SAUSAGE STUFFERS,  
FRUIT, LARD and JELLY PRESSES,  
CHAMPION DRIED BEEF SHAVERS,  
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### The Stamped Stove Pipe Elbow, HOGEN'S PATENT.

The Stamped Elbow has neither Crimps, Cavities nor Angles  
which cause accumulations that rust or corrode the Iron.

OFFICE AND WORKS, Wason St. on Lake Shore, CLEVELAND O.



# RIEHLE BROS.' STANDARD SCALES AND TESTING MACHINES



New Style  
Warehouse  
Scales,  
—  
Iron Tops.

Riehle Bros.' Machines for testing Band Iron, Wire, and all other materials, by tensile, transverse, and crushing strains, from 100 lbs. to 100 tons capacity. New Machine for testing lubricants. Scales for Railroads, Elevators and Wharves. Scales for Furnaces, Rolling Mills, Mines, &c. Testing Machines adopted by U. S. Government. Specimens of materials tested daily at the Works. Trucks for Depots, Warehouses, &c. Highest Centennial Award. Office & Works, 6th St., above Master, Philadelphia. Warehouses, 50 & 52 S. 4th St., Philadelphia. New York Office, 91 Liberty St.



TRADE MARK.  
**The Atlantic White Lead and Linseed Oil Co.,**  
MANUFACTURERS OF  
White Lead (Atlantic), Red Lead, Litharge & Linseed Oil.  
**ROBERT COLGATE & CO.,**  
287 Pearl Street, New York.

**John T. Lewis & Bros.,**  
No. 231 South Front St.,  
PHILADELPHIA.



TRADE MARK.  
MANUFACTURERS OF  
Pure White Lead, Red Lead, Litharge, Orange Mineral, Linseed Oil, AND PAINTERS' COLORS.

**JOHN JEWETT & SONS,**  
Manufacturers of the well-known brand of  
**WHITE LEAD.**

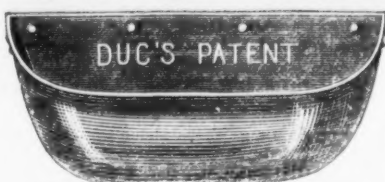


TRADE MARK.  
ALSO MANUFACTURERS OF  
**LINSEED OIL.**  
182 Front Street, NEW YORK  
**Brooklyn White Lead Co.**



TRADE MARK.  
**White Lead, Red Lead & Litharge.**  
89 Maiden Lane, NEW YORK.  
FISHER HOWE, TREASURER

# DUC'S IMPROVED ELEVATOR BUCKET.



THE STORE-HOUSE BUCKET.  
(Partial straight front.)  
In 12 in., 14 in., 16 in. and 17 in. Sizes.

Made of Best Charcoal Stamping Iron.  
**No Corners to Catch.**  
**Requires Less Power.**  
The only Scientifically Constructed Elevator Bucket  
in the Market.



THE MILL BUCKET.  
In 3 1/2 in. to 10 in.  
Sizes.

**T. F. ROWLAND,**

Sole Manufacturer,  
**CONTINENTAL WORKS, Brooklyn, E. D., N. Y.**

# NICHOLSON FILE CO.,

Manufacturers of

# FILES AND RASPS.

ALSO

# Filers' Tools & Specialties.

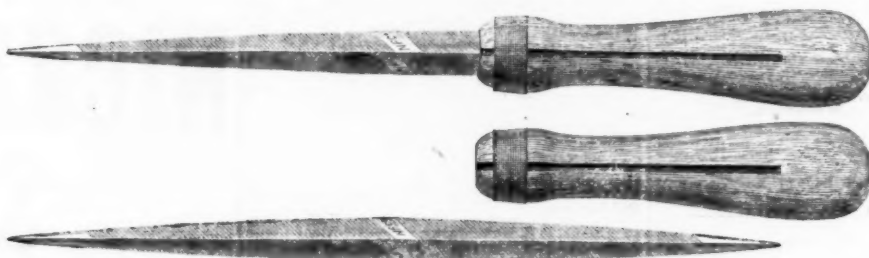
Manufactory and Offices at Providence, R. I.

The following space will be used in illustrating our specialties, the matter being changed weekly.

## "DOUBLE ENDER"

## HAND-SAW FILE AND HANDLE.

Patented January 1st, 1878.



The above illustrations represent a new pattern of Hand-Saw File and Handle; also the two combined as when ready for use.

We have for a long time felt that a File so universally used as the Hand Saw File could be presented to the public in a form that would more perfectly adapt it to their wants, and that at the same time it should be accompanied with a cheap and convenient form of handle, which could be instantly affixed.

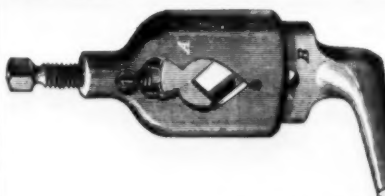
Our Double Enders meet both these ideas, and cannot, we think, fail to commend themselves to all classes in the community who will give them a trial.

They are neatly put up in boxes containing six Double Enders and Six Handles, and designated as follows:

- |   |
|---|
| No. 7, Double Ender, single cut—represents two 3 1/2 in. Taper Saw Files. |
| No. 8, " " " " " 4 " " "  |
| No. 9, " " " " " 4 1/2 " " "  |
| No. 10, " " " " " 5 " " "   |

Every parcel will be labeled, and every handle stamped, with the words "Double Ender," which we have secured as our *Trade Mark*, and by which this class of goods will be known.

Its genuine merit as a simple and useful combination is as apparent as its economy, and, combined, they render it so desirable an article for the consumer as to at once command the favorable attention of the dealer.



NORTH'S PATENT

## Universal Lathe Dog.

It is very strong. Holds very strong. Will not deface finished work. Holds round, square or irregular work. Always stands up square with the work and will not "skew." Is more evenly balanced than the common dog.

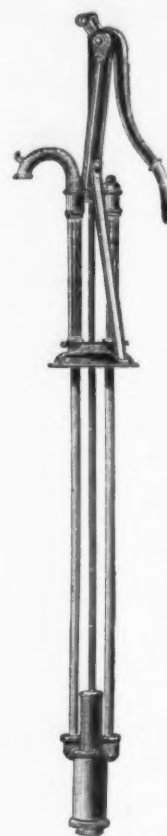
SELDEN G. NORTH, No. 347 North 4th Street, Philadelphia, Pa.



**NONESUCH  
Self Locking  
and  
Burglar Proof  
Window Locks.**

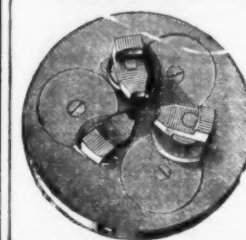
Cheapest and best in the market. Send 25c. for sample, price list, &c., to  
**FRED. J. HOYT**  
733 Broadway, N. Y.

Where the **BUCKEYE FORCE PUMP** has been introduced it is preferred above all others, because it works easy, throws a constant stream, and is simple, durable and clean. Send for circulars, prices and terms to



**MAST, FOOS & CO., Springfield, Ohio,**  
Manufacturers.

## JOHNSON'S PATENT UNIVERSAL LATHE CHUCK.



We invite attention to the superior construction of this chuck. Its workpiece parts are absolutely protected from dirt and chips. It is strong, compact and durable, and will hold the greatest variety of work, as the jaws are adjustable with a range the full diameter of the chuck. For Price List address:  
**Lambertville Iron Works, Lambertville, N. J.**

## PERRY & CO.'S STEEL PENS



A sample card containing our leading styles mailed on receipt of 25c.  
**IVISON, BLAKEMAN, TAYLOR & CO.,** Sole Agents for the U. S.  
138 and 140 Grand St., New York.  
**PERRY & CO., Ltd., London.**  
119 & 114 William St., New York.

## PHILADELPHIA HYDRAULIC WORKS,

Evelina and Levant Sts.,  
**General Machinists**  
and Manufacturers of  
Steam Pumps and Steam Fire Engines.

## STEAM PUMPS



## "DRAW CUT" BUTCHERS' MACHINES.

Choppers, Hand and Power.  
Stuffers,  
Lard Presses.  
Warranted thoroughly made and the BEST IN USE.  
**MURRAY IRON WORK**  
Burlington, Iowa



## STEAM ENGINES,

**A. B. FARQUHAR, York, Pa.**  
Cheapest and best for all purposes—simple, strong, and durable. Also Fraction Engines for common roads.  
SAW, GRIST AND RICE MILLS, GINS, PRESSES AND MACHINERY generally. Inquiries promptly answered.

## Patent Portable Hoisting Machines

To Lift	To Raise.	Price.	Ex Ft.
5 ft.	500 lb.	\$22 50	\$1 00
8	1,000	24 00	1 25
8	2,000	30 00	1 50
8	3,000	35 00	2 00
10	5,000	75 00	3 50
10	8,000	95 00	3 75
12	12,000	150 00	5 00
12	15,000	225 00	5 75
12	20,000	300 00	6 00

**EDWIN HARRINGTON & SON,**  
Also Manufacturers of Machinery Tools.  
15th St. and Pennsylvania Ave.,  
PHILADELPHIA.



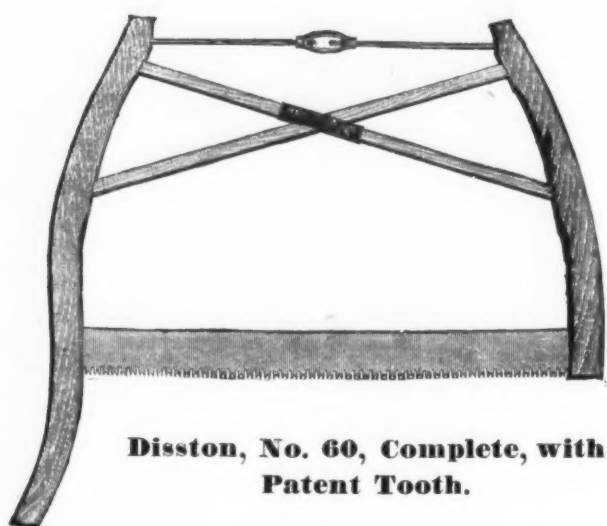
# HENRY DISSTON & SONS

## Keystone Saw, Tool, Steel & File Works.

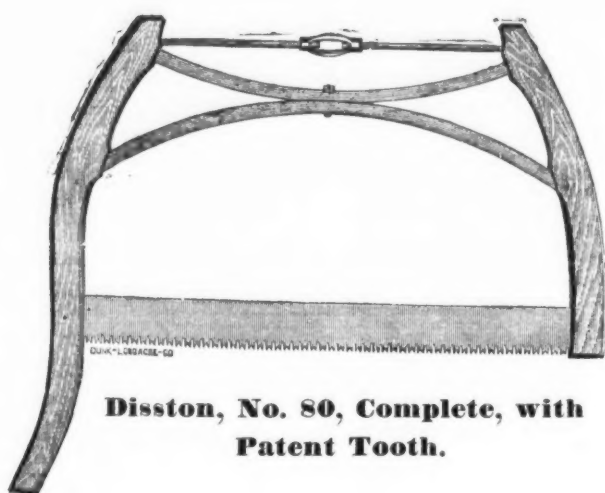
### FRONT AND LAUREL STREETS, PHILADELPHIA.

Branch Works, Tacony, Philadelphia.

Branch House, Randolph &amp; Market Streets, Chicago, Ill.



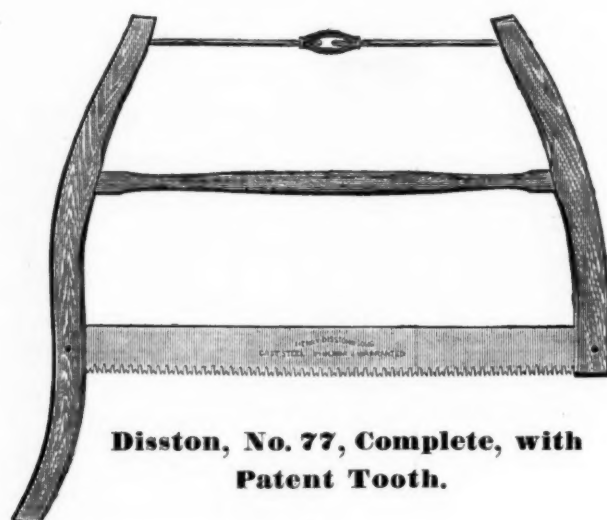
**Disston, No. 60, Complete, with Patent Tooth.**



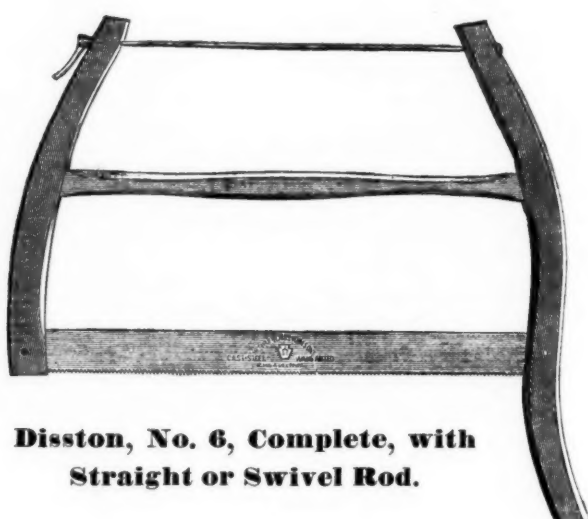
**Disston, No. 80, Complete, with Patent Tooth.**



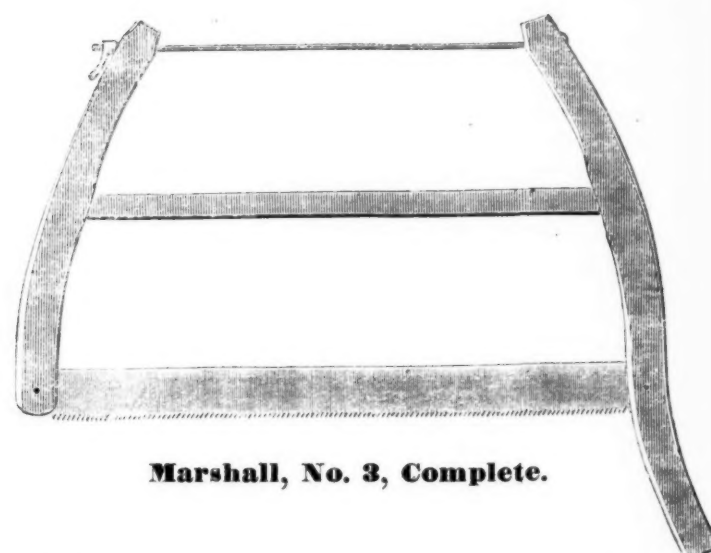
**Disston, No. 70, Complete, with Patent Tooth.**



**Disston, No. 77, Complete, with Patent Tooth.**



**Disston, No. 6, Complete, with Straight or Swivel Rod.**



**Marshall, No. 3, Complete.**



**No. 6, Wood Saw Blade.**



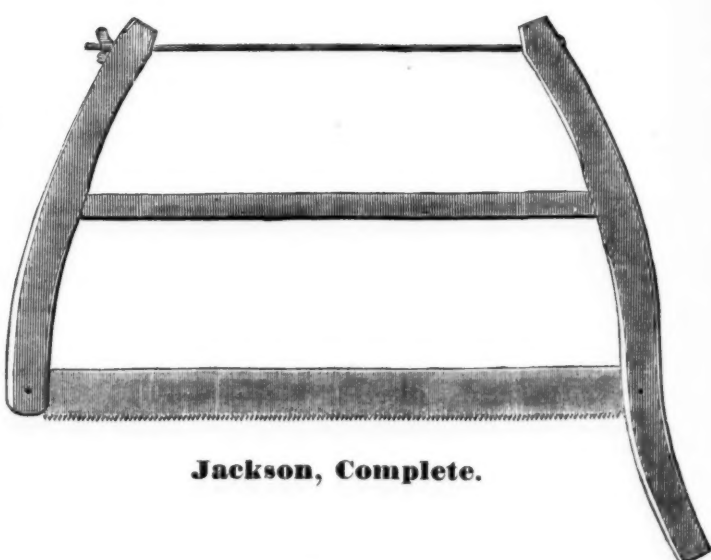
**No. B., Marshall Wood Saw Blade.**



**No. 77, Wood Saw Blade.**



**Jackson Wood Saw Blade.**



**Jackson, Complete.**

## TO THE TRADE.

The above cuts represent some of our various styles of Wood Saws and Frames.

All Saws marked Disston are fully warranted, and if found defective will be exchanged for new ones.

Every article manufactured by our house is guaranteed to be as represented.

In ordering, be sure that the goods are made by Henry Disston & Sons, as some parties are copying our numbers and marks.



## New York Wholesale Prices, August 7, 1878.

## HARDWARE

[illegible][illegible][illegible]

**Hinges.**  
Gate, Western ..... \$ doz \$2.75, dis 50  
" N. E. ..... \$ doz \$10.15, dis 50  
" N. W. ..... \$ doz \$10.15, dis 50  
Gate, Clark's No. 1 ..... \$ doz \$6.00, dis 50  
" N. Y. State ..... \$ doz \$7.25, dis 50  
" Common Sense ..... \$ doz \$6.00, dis 50  
" Seymour's ..... \$ doz \$6.00, dis 50  
" Patent ..... \$ doz \$6.00, dis 50  
Rolled Blind Hinge ..... \$ doz \$6.00, dis 50  
Rolled Plate ..... \$ doz \$6.00, dis 50  
Rolled Ratchet ..... \$ doz \$6.00, dis 50  
Wrought Strap ..... \$ doz \$6.00, dis 50  
Plate Hinges ..... 6 to 10 in. \$4.50 c  
" Providence ..... 10 to 12 in. \$4.50 c  
Screw Hook and Strap ..... 12 to 14 in. \$4.50 c  
Heavy Welded Hook ..... 14 in. \$4.50 c  
Screw Hook and Eye ..... 14 in. \$4.50 c

**Hoops.**—Solid Shank, C. S. .... \$ doz \$2.25, dis 50  
Socket ..... \$ doz \$2.25, dis 50  
Rifled Hoop ..... \$ doz \$2.25, dis 50  
Grab ..... \$ doz \$2.25, dis 50  
Hanger ..... \$ doz \$2.25, dis 50  
Screw Hanger ..... \$ doz \$2.25, dis 50  
Handled Solid C. S. Shank ..... \$ doz \$2.25, dis 50  
Platters, Handled ..... \$ doz \$2.25, dis 50  
South Patent, Handled ..... \$ doz \$2.25, dis 50  
Flick's Pat. Solid C. S. Platters ..... \$ doz \$2.25, dis 50  
" Scovill's Pattern ..... \$ doz \$2.25, dis 50

**Hooks.**  
Bird Cage, Sargent's list ..... \$ doz \$2.25, dis 50  
Cotton ..... \$ doz \$2.25, dis 50  
Belt, (new list) 7 c ..... \$ doz \$2.25, dis 50  
Bench—Hotchicks' \$5.00 c doz ..... \$ doz \$2.25, dis 50  
" McGill's \$3.00 c doz ..... \$ doz \$2.25, dis 50  
" Skinner's \$2.00 c per doz ..... \$ doz \$2.25, dis 50  
Clothes Line, Hart's list ..... \$ doz \$2.25, dis 50  
" Sargent's list ..... \$ doz \$2.25, dis 50  
Ceiling ..... \$ doz \$2.25, dis 50  
" Sargent's list ..... \$ doz \$2.25, dis 50  
Reading list ..... \$ doz \$2.25, dis 50  
Coat and Hand ..... \$ doz \$2.25, dis 50  
" Sargent's list ..... \$ doz \$2.25, dis 50  
Tassel (T. & S. Mfg. Co.) ..... \$ doz \$2.25, dis 50  
Wrought Staples and Hooks and Staples, dis 75 c 75  
Wire Screw Hooks and Eyes ..... \$ doz \$2.25, dis 50  
Grass and Bush ..... \$ doz \$2.25, dis 50  
South Patent, Handled ..... \$ doz \$2.25, dis 50  
Hooks and Eyes—Malleable Iron ..... \$ doz \$2.25, dis 50  
" Brass ..... \$ doz \$2.25, dis 50

**Horse Nails.**  
Nos. 5, 6, 7, 8, 9  
Available ..... \$ 300 270 250 240 230 220  
Polished ..... \$ 310 280 260 250 240 230  
or Blued ..... \$ 310 280 260 250 240 230  
Bridgewater Iron Co., Nos. 5, 6, 7, 8, 9  
Polished and Blued ..... \$ 310 280 260 250 240 230  
Cortland ..... Nos. 5, 6, 7, 8, 9, 10  
" P. & B. Nos. 5, 6, 7, 8, 9, 10  
Globe (New list), 1 ..... \$ 20 21 22 23 24 25  
H. P. Pointed and Finished ..... \$ 20 21 22 23 24 25  
North Western Fin'd'd ..... \$ 20 21 22 23 24 25  
National, Pointed and Polished, Pat. Fin'd ..... \$ 20 21 22 23 24 25  
Fulton Hammer Co., Nos. 5, 6, 7, 8, 9, 10  
Vulcan P't'd & Blued ..... \$ 20 21 22 23 24 25  
" Horse Shoes—Burden ..... \$ keg \$3.00, dis 50  
" Standard ..... \$ keg \$3.00, dis 50  
Medium and Heavy ..... \$ keg \$3.00, dis 50  
" Mule Shoes ..... \$ keg \$3.00, dis 50  
" Farrier's ..... \$ keg \$3.00, dis 50

**Ice Aisles, Chisels, &c.**  
American Ice Chisel ..... \$ doz \$2.00, dis 50  
National ..... \$ doz \$2.00, dis 50  
Novelty Ice Breakers ..... \$ doz \$2.00, dis 50  
White's Sliding Head Picks ..... \$ doz \$2.00, dis 50  
Drap's ..... \$ doz \$2.00, dis 50  
Wood Head Picks, Sargent's ..... \$ doz \$2.00, dis 50  
Iron ..... \$ doz \$2.00, dis 50  
Ice Mallets Pickin Head ..... \$ doz \$2.00, dis 50  
" Pick in Handle ..... \$ doz \$2.00, dis 50  
Ice Axes, Small Cast or Malleable ..... \$ doz \$2.00, dis 50  
" Large Tongs ..... \$ doz \$2.00, dis 50  
Combination Ice Tools, Patent ..... \$ doz \$2.00, dis 50

**Kettles.**  
Brass, 7 to 13 inches inclusive ..... \$ by size \$2.00, dis 50  
" Larger than 13 inches ..... \$ by size \$2.00, dis 50  
Enamelled ..... \$ by size \$2.00, dis 50

**Knives.**  
Ames' Cut-throat ..... \$ doz \$2.00, dis 50  
" Shoe ..... \$ doz \$2.00, dis 50  
" Bread ..... \$ doz \$2.00, dis 50  
" Wire and Straw "Wadsworth's" ..... \$ doz \$2.00, dis 50  
Table and Pocket ..... \$ doz \$2.00, dis 50

**Knobs.**  
Carriage Jar'd Soc. 7 gross ..... \$ doz \$2.00, dis 50  
" Plain Top ..... \$ doz \$2.00, dis 50  
" Elastic End, No. 5 ..... \$ doz \$2.00, dis 50  
Door, Mineral ..... \$ doz \$2.00, dis 50  
" Plated ..... \$ doz \$2.00, dis 50  
Furniture, Jar'd Soc. 7 gross inch, dis ..... \$ doz \$2.00, dis 50  
" Wood Screws ..... \$ doz \$2.00, dis 50  
Picture (T. & S. Mfg. Co.) ..... \$ doz \$2.00, dis 50  
Shutter, Porcelain ..... \$ doz \$2.00, dis 50

**Ladies.**  
" Morning—Hart's ..... \$ doz \$2.00, dis 50  
" Sargent's ..... \$ doz \$2.00, dis 50  
" Reading ..... \$ doz \$2.00, dis 50  
" Monroe's ..... \$ doz \$2.00, dis 50

**Lanterns.**  
" No. 5, \$10.00; No. 1, \$11.00  
Tubular ..... \$ No. 5, \$10.00; No. 1, \$11.00  
Hurricane ..... \$ No. 5, \$10.00; No. 1, \$11.00  
" Plain, 7 gross ..... \$ No. 5, \$10.00; No. 1, \$11.00  
" Extra ..... \$ No. 5, \$10.00; No. 1, \$11.00  
" Yankee ..... \$ No. 5, \$10.00; No. 1, \$11.00  
" Police ..... \$ No. 5, \$10.00; No. 1, \$11.00  
" Convex Reflector ..... \$ No. 5, \$10.00; No. 1, \$11.00  
Draw Cut, 14 inch ..... \$ each \$5.00, dis 50  
Enterprise Mfg. Co. .... \$ each \$5.00, dis 50

**Locks.**  
Porcelain Lined ..... \$ doz \$2.00, dis 50  
Eureka, Tinned ..... \$ doz \$2.00, dis 50  
" Yale, Brass and Steel ..... \$ doz \$2.00, dis 50  
" Sammis' Patent, No. 1, \$7.50; No. 2, \$12.00, dis 20  
" Cotto Chalk ..... \$ doz \$2.00, dis 50  
" Sil. Lake, Taylor ..... \$ doz \$2.00, dis 50  
" Wilson's ..... \$ doz \$2.00, dis 50  
" Moulton's ..... \$ doz \$2.00, dis 50  
" Wire Clothes, Galvanized ..... \$ each \$5.00, dis 50

**Locks and Latches.**  
" Eagle ..... \$ doz \$2.00, dis 50  
" Barnes & Brown ..... \$ doz \$2.00, dis 50  
" Burgess Lock Co. .... \$ doz \$2.00, dis 50  
Trunk ..... \$ doz \$2.00, dis 50  
Langstroth & Crane's List Jan. 1, 77 ..... \$ doz \$2.00, dis 50  
" Flat Key ..... \$ doz \$2.00, dis 50  
" Barnes & Deitz, Flat Key ..... \$ doz \$2.00, dis 50  
" Dodge & Deitz, Flat Key ..... \$ doz \$2.00, dis 50  
" Sharpshooter's, Flat Key ..... \$ doz \$2.00, dis 50  
" American Lock Mfg. Co. .... \$ doz \$2.00, dis 50  
" F. Many's "Extension Cylinder" ..... \$ doz \$2.00, dis 50

**Door Locks, &c.**  
" Branford ..... \$ doz \$2.00, dis 50  
" Norwalk ..... \$ doz \$2.00, dis 50  
" Norwich ..... \$ doz \$2.00, dis 50  
" Malloy, Wheeler & Co. .... \$ doz \$2.00, dis 50  
" Reading Hardware Co. .... \$ doz \$2.00, dis 50  
" Padlocks—Russell & Ervin ..... \$ doz \$2.00, dis 50  
" Malloy, Wheeler & Co. .... \$ doz \$2.00, dis 50  
" D. K. Miller Lock Co. .... \$ doz \$2.00, dis 50  
" American Lock Mfg. Co. .... \$ doz \$2.00, dis 50  
" J. H. McWilliams ..... \$ doz \$2.00, dis 50  
" Penn Lock Works ..... \$ doz \$2.00, dis 50  
" McKee's—Hickory and Lignumvitae ..... \$ doz \$2.00, dis 50

**Mallets.**  
" Dixon (T. & S. W.) Nos. 1, 2, 3, 4 ..... \$ doz \$2.00, dis 50  
" Miles' Challenge ..... \$ doz \$2.00, dis 50  
" Perry's Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164,

U. S. Navy	.....	10	85c
<b>Oil.</b>	.....	10	75c
Brass and Copper	.....	10	45 c
Olmsted's	.....	10	45 c
Broughton's	.....	10	40 c
Patent	.....	10	40 c
Prior's Patent or "Paragon"	.....	10	50 c
<b>Oil Mills</b>	.....	10	50 c
Faber's Carpenters'	.....	10	40 c
Round Gill	.....	10	25 c
Dixon's	.....	10	25 c
Lumber	.....	10	75 c
<b>Peach Parers.</b>	.....	10	75 c
Picture	.....	10	12.00
<b>Picture Nails and Knobs.</b>	.....	10	12.00
Brass Head, Sargent's List	.....	10	50 c
Porcelain Head, Sargent's List	.....	10	50 c
Judd's List	.....	10	40 c
Porcelain Head	.....	10	40 c
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<b>Planes and Plane Irons.</b>	.....	10	15.00
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Middletown Tool Co.	.....	10	15.00
Spear & Jackson's	.....	10	15.00
Sandsbury Tool Co.	.....	10	15.00
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Hull's Patent Nippers, No. 1, \$15; No. 2, \$21	.....	10	15.00
Hudson & Beckley Mfg. Co.	.....	10	15.00
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Johnson's Patent Adjustable	.....	10	15.00
Davis' Patent	.....	10	15.00
Pocket Levels	.....	10	15.00
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Lead's	.....	10	15.00
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Pruning Hook	.....	10	15.00
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Standard Tackle	.....	10	15.00
Brass Screw	.....	10	15.00
Jap'd Slide	.....	10	15.00
Hay Fork Solid Eye, \$4.75; Swivel, \$5.00	.....	10	15.00
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Leach's Patent	.....	10	15.00
Bemis'	.....	10	15.00
Solid, Tanners	.....	10	15.00
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Sliding Door, Wrought Brass	.....	10	15.00
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<b>Rakes.</b>	.....	10	15.00
Cast Steel	.....	10	15.00
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Chapin's	.....	10	15.00
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Stephens	.....	10	15.00
Stearns'	.....	10	15.00
<b>Saws.</b>	.....	10	15.00
Self-Heating	.....	10	15.00
Enterprise Patent Cold Handle	.....	10	15.00
Mrs. Pott's Pat. Cold Handle, "Crown"	.....	10	15.00
Saunders' and Sad Iron	.....	10	15.00
<b>Sand Paper.</b>	.....	10	15.00
Baeder & Adamson's Flint, 10 to 15, \$4.25 per ream	.....	10	15.00
" " " 2 1/2 & 3, 4.75 per ream	.....	10	15.00
" " " 3 & 4, 5.25 per ream	.....	10	15.00
" " " Star, 5.75 per ream	.....	10	15.00
" " " Emery, 6.25 per ream	.....	10	15.00
New England, same list as B. & A. Flint	.....	10	15.00
<b>Sash Cord.</b>	.....	10	15.00
Common	.....	10	15.00
Putnam's Light Line	.....	10	15.00
Silver Lake Russia Flax	.....	10	15.00
" " White Cotton	.....	10	15.00
Draw Cord	.....	10	15.00
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phatium ..... 95  
benzine ..... 52 1/2  
chick ..... 51  
" Block ..... 51  
Dryer, Patent, Am'n ..... 50  
roasting ..... 50  
Line, White ..... 31 00 4 75  
" Sheet ..... 45  
Glaziers' Points, Zinc ..... 25  
" Damar ..... 25  
" Shellac, English ..... 25  
" dark ..... 25  
Altharge, English ..... 25  
Mineral Wool ..... 25  
Lime Stone, selected Lump ..... 25  
" powdered ..... 25  
Putty, in bladders ..... 25  
" in bulk ..... 25  
Rotten Stone, soft, English ..... 25  
Turpentine ..... 25  
Whiting Spanish ..... 25

**GLASS.**

**FRENCH WINDOW GLASS.**  
Prices current per box of 50 feet.

Single Thick.—discount 60x3 1/4

SIZES.	1st.	2d.	3d.	4th
6 x 8 to 10 x 15.....	\$ 7.50	\$ 6.75	\$ 6.25	\$ 5.75
8 x 14 to 10 x 24.....	8.50	7.75	7.25	6.50
10 x 20 to 20 x 30.....	10.75	9.75	8.75	7.75
12 x 30 to 24 x 30.....	12.75	10.75	9.00	8.00
16 x 20 to 24 x 36.....	15.00	11.50	9.75	8.75
18 x 30 to 24 x 44.....	18.00	13.25	11.25	10.25
20 x 40 to 30 x 50.....	20.00	14.00	11.25	10.25
24 x 50 to 30 x 54.....	25.00	16.00	12.00	11.00
30 x 50 to 34 x 60.....	30.00	18.00	13.00	12.00
36 x 50 to 34 x 60.....	36.00	20.75	15.00	14.00
40 x 60 to 40 x 60.....	40.00	23.75	17.50	16.50

Double Thick.—Discount 60x14 1/4

SIZES.	1st.	2d.	3d.	4th.
6 x 8 to 10 x 15.....	\$12.00	\$11.00	\$10.00	\$ 9.75
8 x 14 to 10 x 24.....	13.75	12.50	11.75	10.50
10 x 20 to 20 x 30.....	17.00	15.75	14.00	13.00
12 x 30 to 24 x 30.....	19.75	17.25	14.50	13.50
16 x 20 to 24 x 36.....	24.00	19.50	15.75	14.75
18 x 30 to 24 x 44.....	28.00	21.25	17.25	16.25
20 x 40 to 30 x 50.....	32.00	23.50	19.00	18.00
24 x 50 to 30 x 54.....	37.50	26.25	21.25	20.25
30 x 50 to 34 x 60.....	43.00	29.00	23.50	22.50
36 x 50 to 34 x 60.....	48.00	31.75	25.00	24.00
40 x 60 to 40 x 60.....	53.00	34.50	27.50	26.50

Sizes above 40 x 50—\$10.00 per box extra for every five inches.

An additional 10 per cent. will be charged for all glass more than 40 inches wide. All sizes above 42 inches in length, and not making more than 5 united traches, will be charged in the 5 united inches tray.

# WALBRIDGE & CO.,

Manufacturers and Dealers in

## Iron & Nails,

Screws, &c.

### POST HOLE AUGER,

the able and the handiest Earth Auger in Market. Three holes while any other Auger is boring one, easy in clay, sand, gravel or muck soil, and will cut out the use of shovel or spade to start. To the trade, \$3.50 each. Less 20 per cent.



**SPECIALTIES.**

Wire Nails, National Horse Nails, Buffalo Horse Shoes, Walker Horse Shoes, Toe Calks, Cast Irons, Anvils and Vises, Horse Nails.

Special Brands—"KING OF THE FOREST," "WOOD CHOPPER."

## Hand & Power

# Tools, Drills, Etc.

### PLATE SHEARS,

No. 5 will cut 7-16 Iron through center of sheet.

Manufactured only by

## G. B. Walbridge & Co

83 Reade St.,  
NEW YORK.

E. E. SOUTHER & BRO.,  
St. Louis, Mo.,  
AGENTS.

Patented 1836.

## IRON BOARDS.



"Double Rim."

Long, Nineteen Sizes.

With a very handsome O. G. edge, and lined with the same as heretofore, but improved in finish. Years. It is the safest and most durable Board for appearance as the Iron-Clad. The beading is used under the full width of the board.

MANUFACTURED BY

## PARDE & CO.,

Buffalo, N. Y.

### PIPE WORKS.



Steel.

# R. H. WOLFF & CO.,

IMPORTERS OF  
**IRON AND STEEL.**

Sole Agents for the Sale of the Celebrated  
Pr. HOMOGENEOUS DEC. CAST STEEL, GUN BAR-  
RELS, MOULDS AND ORDNANCE.

Sole Agents for **COCKER BROTHERS, Limited,**  
Successors to **SAML. COCKER & SON, (ESTABLISHED 1752.)**  
**SHEFFIELD, ENGLAND.**

Sole manufacturers of

**"SC" EXTRA' Cast Steel,**  
AND  
**CAST STEEL WIRE** for all purposes.

Sole Makers of

Cocker's "Meteor" Wire Plates.  
Railroad Supplies and General Merchants.  
Office and Warehouse, 46 Cliff Street, New York.

## F. W. MOSS,

Successor to JOSHUA MOSS &amp; GAMBLE BROS.

FRANKLIN WORKS,  
WADSWORTH BRIDGE WORKS,  
WALKLEY WORKS,

SHEFFIELD, ENGLAND.

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MOSS & GAMBLE SUPERIOR C. S. "FULL WEIGHT" FILES,  
Cast Steel Hammers and Sledges. Also, "M. & G." Anvils and Vises.

WARRANTED CAST STEEL, especially adapted for DIES and TURN-  
ING TOOLS, DRILLS, COLD CHISELS,  
PUNCHES and all kinds of MACHINISTS' TOOLS.  
Celebrated Improved Mild Centre Cast Steel, for Taps, Reamers, and Milling Tools,  
warranted not to crack in hardening. Taps of any size.  
Swede Spring Steel, especially adapted to Locomotive and Railway Car Springs.  
English Spring and Plow Plate Steel.

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GENERAL MERCHANT.

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## Bessemer Railway Steel,

MERCHANT BARS, TIRE AND SHAFTING.

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Sole Manufact'rs of "CHOICE" Extra Cast Steel.

Manufacturers of all Descriptions of Steel.

Manufacturers of Every Kind of Steel Wire.

Don Works, Sheffield, England.

CHAS. HUGILL, Agent.

## S. & C. WARDLOW,

Sheffield, England,

Manufacturers of the Celebrated

## Cast and Double Shear STEEL.

In Bars, Sheets and Coils, for fine Pen and Pocket Cutlery, Table Knives,  
Turning Tools, Dies, Files, Clock and other Springs, and Tools of every variety.  
Warehouse, 95 John Street, New York.

WILLIAM BROWN, Representative.

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CONTINENTAL STEEL WORKS, SHEFFIELD, ENGLAND.  
ATTERCLIFFE.

Manufacturers of

## EXTRA BEST WARRANTED CAST STEEL,

For all Descriptions of Fine Tools.

J. M. & C. Manufacture Tool Steel exclusively.  
M. DIAMOND & CO., Principal Agents for the United States and Canada.

Office and Warehouse, No. 6 Ford Street,

HARTFORD, CONN.



BUCK BROS. Milbury, Mass.

The most complete assortment in the U. S. of Shank, Firm and Socket Framing  
Chisels.

## PLANE IRONS.

Gauges of all lengths and circles, beveled inside or outside. Nail sets, Scraper and Belt Awns, Chisel  
Files of all kinds. Orders filled promptly; generally sent by express.

Steel.

## SANDERSON BROTHERS & COMPY'S

**BEST REFINED CAST STEEL.**

Warranted most superior for TOOLS AND GRANITE ROCK DRILLS.

A full assortment of this universally approved OLD BRAND and other Steels for sale by

FRITH &amp; TILESTON, Agents,

EDWARD FRITH,  
WM. TILESTON.

No. 16 Cliff Street, NEW YORK.

LABELLE STEEL WORKS.

## SMITH, SUTTON & CO.,

MANUFACTURERS OF ALL KINDS OF

## STEEL.

Also Springs, Axles, Rake Teeth, &amp;c.

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Post Office Address, Pittsburgh, Pa.

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Water St.; at Chicago by S. D. KIMBARK, 86 to 84 Michigan Ave.

## MIDVALE STEEL WORKS.

Works and Office, NICETOWN, PHILADELPHIA, PA.

MANUFACTURERS OF

## CRUCIBLE AND OPEN HEARTH STEEL,

Steel Locomotive and Car Wheel Tires. Steel Axles of every description.

STEEL FORGINGS UP TO 8000 lbs. IN WEIGHT.

Solid Steel Castings, Hammer Dies, Frogs, Crossings, etc.

BEST TOOL, MACHINERY AND SPRING STEELS.

WM. SELLERS, Pres.

CHAS. A. BRINLEY, Supt.

MARRIOTT C. SMYTH, Sec. &amp; Treas.

## MILLER, METCALF & PARKIN

Crescent Steel Works,  
PITTSBURGH, PA.,  
Manufacturers of all Descriptions of



## STEEL,

EQUAL TO ANY IN THE MARKET.

Office, 81 Wood Street, - PITTSBURGH, PA.

Established 1810.

## J. & RILEY CARR,

SHEFFIELD, ENGLAND.

Manufacturers of the "Celebrated

## "DOG BRAND" FILES.

Also of Superior

## STEEL

For Drills, Cold Chisels, Tools, Taps, Dies, &amp;c.

COLD ROLLED STEEL for Clock Springs, Corsets, &amp;c.

SHEET CAST STEEL for Springs, Saws, Welding and Stamping Cold, &amp;c.

GERMAN, MACHINERY, ENGLISH AND SWEDISH SPRING STEEL,

And all other descriptions for machinists and agricultural purposes.

Warehouse, 30 Gold Street, New York.

Near John Street.

HENRY MOORE, Agent.



## The Ironmonger & Metal Trades' Advertiser.

A WEEKLY TRADE JOURNAL.

PUBLISHED EVERY SATURDAY, AT 44a CANNON STREET, LONDON, E. C.,

And issued in 53 Numbers, one in the form of a handsome Diary and Text Book,  
adapted to the Ironmongery and Metal Trades.

"THE IRONMONGER" was established in 1859, and is the oldest and chief representative organ of the  
Iron, Hardware and Metal Trades. This journal stands pre-eminent amongst trade publications, and  
possesses all the advantages of the Commercial Newspaper and a high-class Literary Magazine. The  
principal characteristics of the "THE IRONMONGER" are the accuracy of its Market Reports and Prices  
Current; the intrinsic value of its Home, Foreign and Colonial Correspondence; the impartiality of  
its criticism upon the leading novelties of the day; its careful selection of Agricultural, Legal and  
Magisterial News appertaining to the Metal Trades; the completeness of its list of Patents and General  
Statistics, and its multiplicity of classified Advertisements. The main object of this publication is to  
furnish a faithful record of all things of specific value to those interested in the manufacture, purchase,  
consignment, shipment or sale of Hardware, Arms and Ammunition, Oils, Seeds, Implements, Ma-  
chinery and Metals.

The Foreign Supplement is published every fourth Saturday, in English, French, German, Spanish  
and Italian, giving a selection of suitable news and advertisements. Full terms on application to the  
office in London.

GREAT BRITAIN, IRELAND, Australasia, Belgium, Brazil, Canada, Cape of Good  
Hope, China, France, Germany, Greece, India, Italy, River Plate, Russia,  
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Ironmongers, Merchant Shippers, Foreign and Colonial Store Dealers, Factors,  
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through the publisher of The Iron Age, 3, Roade Street, New York.

Steel.

## R. MUSHET'S

Special Steel  
FOR  
**LATHES, PLANERS, &c.**

Turns out at least double work by increased speed  
and feed, and cuts harder metals than any other  
Steel. Neither hardening nor tempering required.

Sole Makers

**SAMUEL OSBORN & CO.,**  
Sheffield, England.

Represented by

**RANDALL & JONES,** 10 Oliver St., Boston.  
BRANCH, CROOKES & CO., Vine Street, St. Louis, Mo.

## STEEL RESTORATIVE WORKS

119 Greenwich Ave., near W. 13th St.,  
NEW YORK.

Manufacturers of Bauer's Peerless Steel Restorative  
Compound, wherein all Steel Tools, such as Dies,  
Cutters, Jewelers' Rollers, &c., can be hardened, and  
they will stand five times better than has ever been  
accomplished by any other process.

Gunpowder.

## GUNPOWDER

## DUPONT'S

Sporting, Shipping, and Mining  
**POWDER.**

DUPONT'S GUNPOWDER MILLS,  
ESTABLISHED IN 1801.

Have maintained their great reputation for 75  
years. Manufacture the

Celebrated Eagle Ducking,  
Eagle Rifle, & Diamond  
Grain Powder.

THE MOST POPULAR POWDER IN USE.

Also, SPORTING, MINING, SHIPPING, AND BLAST-  
ING POWDER.

of all kinds and descriptions.

For sale in all parts of the country. Represent  
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## F. L. KNEELAND

70 Wall Street, NEW YORK.

## GUN POWDER.

Laflin & Rand Powder Co.

No. 26 Murray Street, New York,

Manufacture and sell the following celebrated brands  
of Sporting Powder known everywhere as

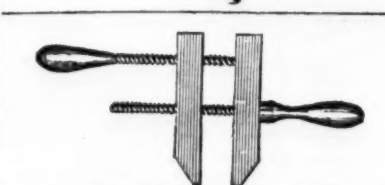
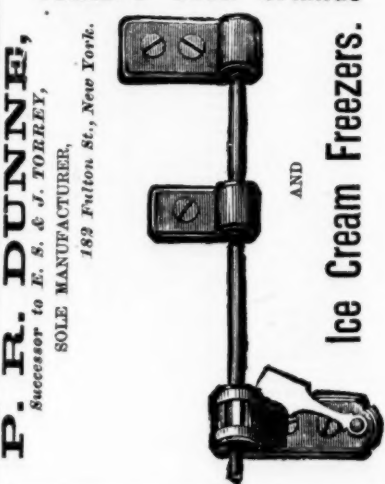
ORANGE LIGHTNING,  
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ORANGE RIFLE

more popular than any Powder now in use.  
Blasting Powder and Electrical Blasting  
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Military Powder on hand and made to order.  
SAFETY FUSE, FRICTIONAL & PLATINUM  
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Pamphlets showing sizes of grain sent free.

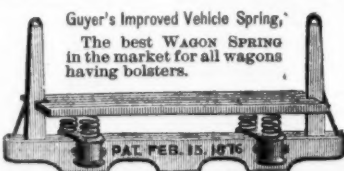
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R. BLISS MFG. CO.,

Manufacturers of Hand and Bench Screws, Cab-  
inet and Piano-Forse Makers' Clamps, Chisel Han-  
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Boys' Tool Chests, Architectural Building Blocks,  
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Patented, R. I.



Guy's Improved Vehicle Spring.

The best WAGON SPRING  
in the market for all wagons  
having bolsters.

Sold by

DEERE, MANSTER & CO., St. Louis, Mo.  
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Circulars and price lists furnished. Address  
**THE LAFAYETTE WAGON SPRING CO.,**  
Sole Manufacturers, Lafayette, Ind.



Steel.

# THE EDGAR THOMSON STEEL CO., LIMITED.

MANUFACTURERS OF



General Office and Works at Bessemer Station (Penn. R. R.), Allegheny County, Pa.

New York Office, 57 Broadway.

The members of the Edgar Thomson Steel Company, Limited, have had large experience in manufacturing and in railway management; their works are the most complete in the world, with all the late improvements, and are located in the best Bessemer metal district in the United States, and their managing officers are experienced in the manufacture of Bessemer Steel.

The Company warrants its rails equal in quality to any manufactured in the United States. Rails of any weight or section furnished on short notice. Orders for trial lots solicited.

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## JOHN WILSON'S CELEBRATED BUTCHERS' KNIVES, BUTCHERS' STEELS, AND SHOE KNIVES.



BUTCHERS' KNIVES, BUTCHERS' STEELS, AND SHOE KNIVES.

THE TRADE MARK, IN ADDITION TO THE NAME, IS STAMPED UPON EVERY ARTICLE MANUFACTURED BY JOHN WILSON.

GRANTED A.D. 1766, BY THE CORPORATION OF CUTLERS OF SHEFFIELD, AND PROTECTED BY ACT OF PARLIAMENT. Works:--SYCAMORE STREET, SHEFFIELD. ESTABLISHED in the Year 1750.

## HERMANN BOKER & CO.,

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LIÈGE (Belgium), Represented by Mr. LOUIS MULLER.  
Manufacturers and Importers of Cutlery, Guns, Hardware and Railroad Material.  
Proprietors of TRENTON VISE and TOOL WORKS, Trenton, N. J.—Vises, Picks, Mattocks, Grub Hoes, Sledges, Hammers, Bridge Work, Turn Tables, etc.  
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LANSON & GOODNOW MFG. CO., Shelburne Falls, Mass.—Table Cutlery and Butcher Knives.

W. & S. Butcher's Files, Edge Tools and Razors, the largest stock in the United States.  
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John Wilson's Butcher and Shoe Knives.  
Gardner's Pocket Knives. Trenton Anvils.  
We always have on hand a full assortment of German and English Hardware, Cutlery, Guns, Gun Material, Chains, Heavy Goods.

## The 1878 Pennsylvania Lawn Mower.

LIGHT DRAFT AND EASILY ADJUSTED.



This machine presents all the advantages of a light and durable LAWN MOWER, and we believe has good qualities which cannot fail to be appreciated. It is the lightest machine in use, and all that is necessary to satisfy our customers of its superiority is to place it in competition with any other machine in the town in which they may reside.

Every machine warranted to work as represented.

### PRICE LIST.

Width of Cutter.	Description.	Price.
12 inch.	8 in. driving wheel, wt. 33 1/2 lbs. Can be used by a lady. each, \$18.00	
14 "	8 in. driving wheel, wt. 34 1/2 lbs. Can be used by a lady. " 20.00	
16 "	8 in. driving wheel, wt. 36 1/2 lbs. One man size. " 22.00	

### GENERAL AGENTS:

LLOYD, SUPPLEE & WALTON, 625 Market St., Philadelphia.

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### NICHOLS' SELF-ACTING CARBOXY PUMP.



Indispensable to Brass and Copper Manufacturers, Iron Foundries, Galvanizing Shops, Smelting Works, &c., &c.

For circulars or orders, Address  
Acid Pump & Siphon Co  
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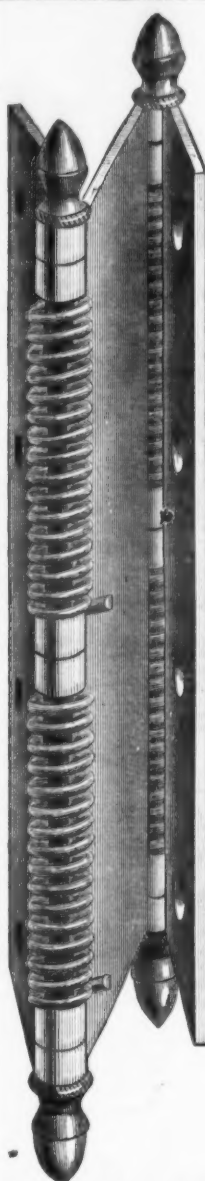
The Old Way.

The New.

## D. K. MILLER LOCK CO.,

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Greatly improved. Prices reduced. As now made it is the best and most economical Pad Lock for all uses extant. Appreciated by all who use them. For simplicity, compactness, durability, convenience and security it has no equal. Springs now made from the celebrated Phosphor Bronze. We make these Locks with Master Keys when so ordered. Largely used by the U. S. Government, Railroads, Corporations, etc., etc. Samples of 2 1/4 in. size sent per mail on receipt of one dollar.



## SPRING HINGES WITH Patent Anti-Friction Springs, FOR SCREEN DOORS.

PRICE LIST.—Per Dozen Pairs.  
SINGLE JOINT HINGES.  
(To Swing one way.)

SIZE.	WITHOUT ACORN TIPS.		WITH ACORN TIPS.	
	BRASS.	NICKEL PLATED.	BRASS.	NICKEL PLATED.
2 3/8 inch.....	\$ 3 00	\$ 4 50	\$ 5 00	\$ 6 50
3 ".....	4 50	6 50	6 75	8 75
5 ".....	7 50	10 00	10 00	12 50
4 1/2 x 4 1/2 inch.....	15 00	23 00	21 00	26 00

The 4 1/2 x 4 1/2 is Extra Heavy.

## DOUBLE JOINT HINGES.

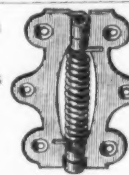
(To Swing both ways.)

To be used on Door 1 inch thick, or less.

SIZE.	WITHOUT ACORN TIPS.		WITH ACORN TIPS.	
	BRASS.	NICKEL PLATED.	BRASS.	NICKEL PLATED.
2 3/8 inch.....	\$ 6 60	\$ 9 00	\$11 50	\$14 25
3 ".....	8 30	11 50	13 50	17 00
5 ".....	16 50	21 00	21 50	26 00

The large cut represents full size of our 5 inch Double Joint Acorn Tip Hinge for mortising.

The small cut represents the plain Single Joint Hinges, but not full size.



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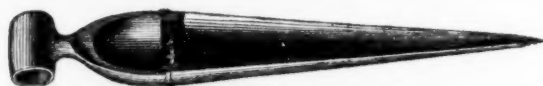
## WM. A. IVES & CO.,

New Haven, Conn.

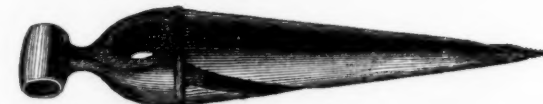
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No. 1, Half Round, Scroll Point.



No. 2, Half Round.



No. 4, Volute.



Ives' Extra Cast-Steel Auger Bit.

(Old Style.)

It is believed to be in all respects the best and most perfect common Bit ever made. Its use will demonstrate the fact. Its point shows a single, not a coarse, thread.



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## WORTHINGTON & SONS.

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Manufacturers of

## Lake Huron Amherst and Berea

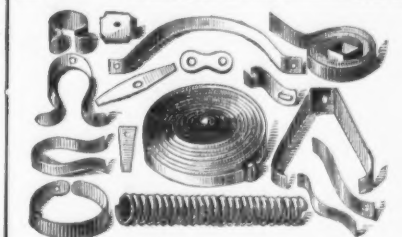
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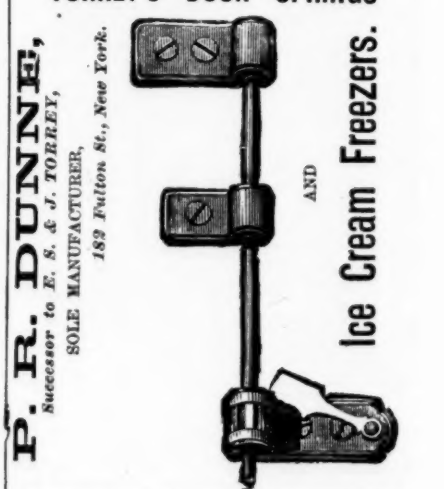
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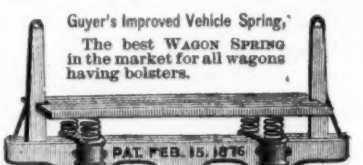


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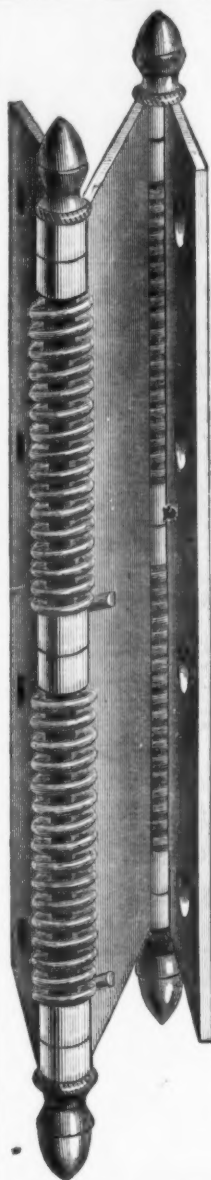
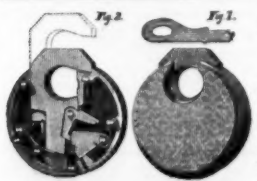


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PRICE LIST.—Per Dozen Pairs.

SINGLE JOINT HINGES.

(To Swing one way.)

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3 "	4 50	6 50	6 75	8 75
5 "	7 50	10 00	10 00	12 50
4½ x 4½ inch.	18 00	23 00	21 00	26 00

The 4½ x 4½ is Extra Heavy.

DOUBLE JOINT HINGES.

(To Swing both ways.)

To be used on Door 1 inch thick, or less.

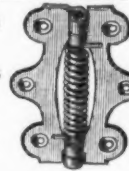
SIZE.	WITHOUT ACORN TIPS.		WITH ACORN TIPS.	
	BRASS.	NICKEL PLATED.	BRASS.	NICKEL PLATED.
2½ inch.	\$ 6 60	\$ 9 00	\$11 50	\$14 25
3 "	8 30	11 50	13 50	17 00
5 "	16 50	21 00	21 50	26 00

The large cut represents full size of our 5 inch

Double Joint Acorn Tip Hinge for mortising.

The small cut represents the plain Single Joint

Hinges, but not full size.



Liberal Discount to the Trade.

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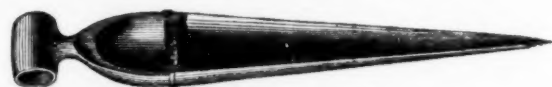
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New Haven, Conn.

## IVES' PAT. TAP BORERS.



No. 1, Half Round, Scroll Point.



No. 2, Half Round.



No. 4, Volute.



Ives' Extra Cast-Steel Auger Bit.

(Old Style.)

It is believed to be in all respects the best and most perfect common Bit ever made. Its use will demonstrate the fact. Its point shows a single, not a coarse, thread.

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Manufacturers of LOCKS, DOOR KNOBS AND FIRE-PROOF SAFES

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Berea, O., Nova Scotia, &amp; other brands.

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Manufacturers of

## Lake Huron Amherst and Berea

## GRINDSTONES.

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Manufacturers of

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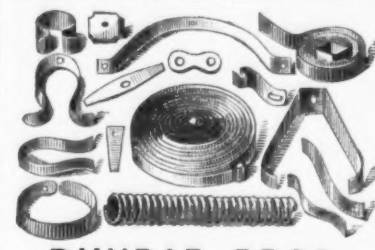
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Clock Springs and Small Springs

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Buff and Light Drab Colors. Independence and Am

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Fire-proof and Mineral Paints. Fire-proof Stove Putty.

Orders promptly filled. CLEVELAND, O.

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**WHEELING HINGE CO.,**

Wheeling, West Va.,

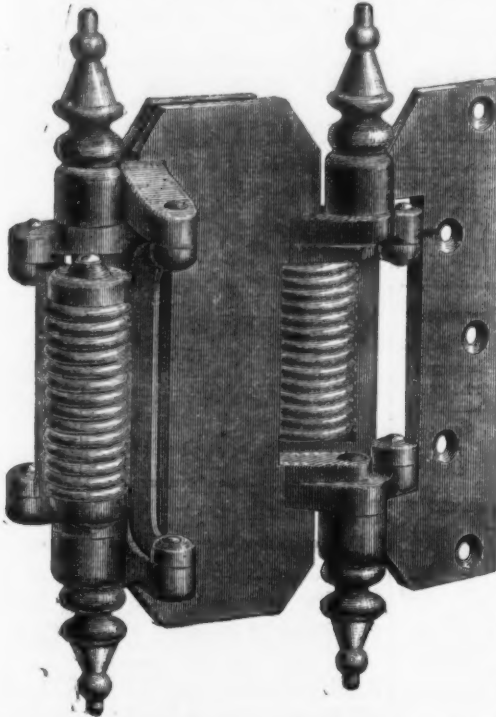
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**Spring Butts for Screen Doors,**

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**POINTS OF SUPERIORITY:**

They exert their greatest force at the closing point.  
They will not allow the door to sag.  
They will retain the door against the wall when opened back of a right angle.

Single acting, for swinging doors one way, doors 7/8 or 1 in. thick, per pair.....\$1.25  
Double acting, for swinging doors both ways, per pair.....2.00  
Liberal discount to the trade.  
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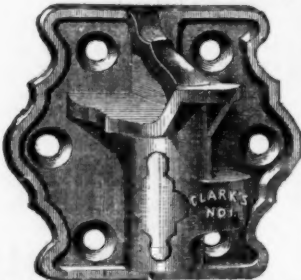
We can also furnish all sizes of larger Butts, working on same principle.

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MANUFACTURED BY

**The American Lock Mfg. Co.,**

Are the most **SECURE** and **DURABLE** ever made.

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Because they have 40 Brass Tumblers, independent in their action, either one of which will prevent the lock from being opened unless brought to proper position by the Key.

**DURABLE**

Because we use no Springs to break or get out of place.

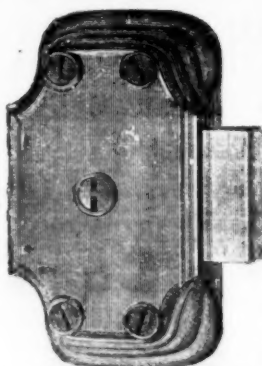


THEY HAVE  
**STERLING METAL KEYS**

That will not corrode or wear, and are stronger than steel.

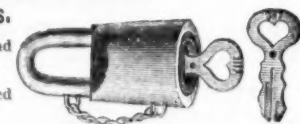


FULL SIZE OF KEY.



Upright Rim Dead Locks,  
Horizontal Rim Night Latches,  
Horizontal Rim Tubular Night Latches,  
Mortise Night Latches, Plain Fronts,  
Mortise Night Latches, Ornamental Bronze Fronts and Knobs,  
Brass Chest, Box, Cupboard and Drawer Locks,  
Solid Bronze Padlocks.

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**THE CHESTER MICA AND PORCELAIN CO.**

OFFER

Mica of the Best Quality,  
Feldspar of highest Standard and Purity,  
Quartz, the Finest, Whitest, Best.  
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Best Terms, Wholesale and Retail.

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Established in 1839.

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Manufacturers of

THE GENUINE

COES'

**SCREW WRENCHES.**

Our goods have been very much improved recently, by making the Bar WIDE, as shown in the cut, which makes a 12 in. Wrench as strong as a 15 in. made in the ordinary way, and by using

**A. G. COES'**

NEW PATENT

**FERRULE**

Which cannot be forced back into the handle.

Our goods are manufactured under Patents dated February 7, 1860, (re-issued June 29, 1871), May 2, 1871, and Dec. 26, 1871, and any violation of either will be vigorously prosecuted.

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**A. G. COES & CO.**

Our Agents, GRAHAM & HAINES, 113 Chambers St. New York, carry a full line of our goods, and will be pleased to serve you at factory prices.

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Manufacturers of  
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Tin, Copper and Boiler Makers'  
**MALLETS,**

Hawking Beetsles, Hawking and Calking Irons also all kinds of Handles, Sledge, Chisel and Hammer Handles. ALSO

**COTTON AND BALE HOOKS,**  
Patented Feb. 13, 1871; a new combination of Hooks.  
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**BRASS Pad Locks,**  
FOR  
Railroad Switches, Freight Cars,  
and the Hardware Trade.

All sizes, with Brass and Steel  
Keys, with & without chains.  
Passenger Car Locks,  
Bronzed, Nickel-Plated and  
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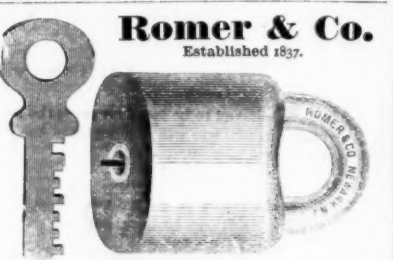
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Will answer for Doors from 1 1/4 to 2 inches.

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House, Tea, Hand,  
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Rail Metal Kettles

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As complete as can be found in any house. Also full stock of

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And a general assortment of

**SHELF AND HEAVY HARDWARE.**

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Consignments of desirable goods solicited.

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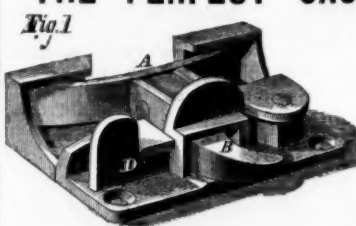
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**FORGED SET SCREWS,**

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**METALLIC CLOTHES PIN,**

For either Wire or Rope Line,

Will securely hold any article, from a silk handkerchief to a carpet. No article can be blown away. Does not soil the clothing. Manufactured by

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SPECIAL DISCOUNTS TO JOBBERS.

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IMPORTANT FOR ALL LARGE CORPORATIONS AND MANUFACTURING CONCERNS.

Capable of controlling with the utmost accuracy the motion of a watchman or patrolman as the same reaches different stations of his beat. The instrument is complete in itself, portable and as reliable as the best lever watch. It requires no fixture or wires communicating from room to room, as is the case with the ordinary watch clocks. A small, inexpensive stationary key is alone required at each station. The instrument will, in all cases, be warranted perfect and satisfactory.

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Bucket Pinner.



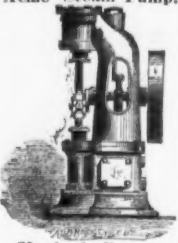
Wright's Patent.

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Manufacturers,

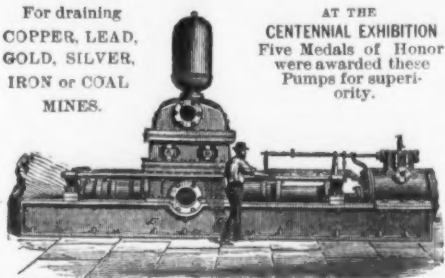
Easthampton, - Massachusetts.

Acme Steam Pump.



Mayer's Patent.

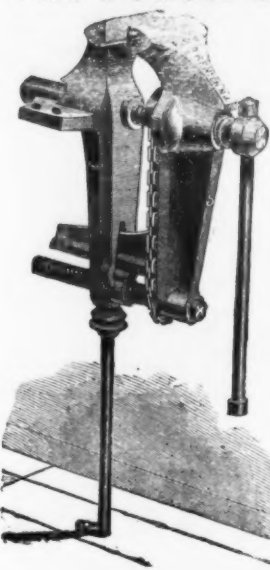
## Knowles' Patent Improved Mining Pumps.

For draining  
COPPER, LEAD,  
GOLD, SILVER,  
IRON or COAL  
MINES.AT THE  
CENTENNIAL EXHIBITION  
Five Medals of Honor  
were awarded these  
Pumps for superi-  
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to Working Water Contain-  
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or Acid.Pumps of capacity of over one million gal-  
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entirely without shock or jar, the entire  
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## The Double Screw Parallel "Leg" Vise

Stronger than any other, whether of Foreign or of American make;  
always parallel and holding with a tighter "grip." The jaws are of con-  
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Our Vise combines all the advantages of the "Peter Wright" Leg  
Vise, of strength and lightness, fastening to the floor and bench, and a  
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points of opening, and never gets out of line. We now warrant the  
Vises for three years from date of manufacture stamped upon each.  
The jaws are of best Tool Cast Steel, welded on, file cut and properly  
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solid cut thread boxes. The lower screw maintains the parallel position  
of the two jaws, by having exact motion with the upper working screw  
through the connecting chain which regulates it. The chain has no strain  
of the work upon it, and is therefore as durable as all the other parts.

### REDUCED PRICE LIST.

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All sizes of these Vises furnished with swivel Attachment at  
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For Chain Pumps.

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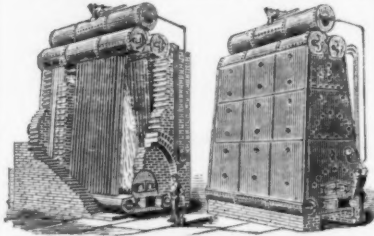
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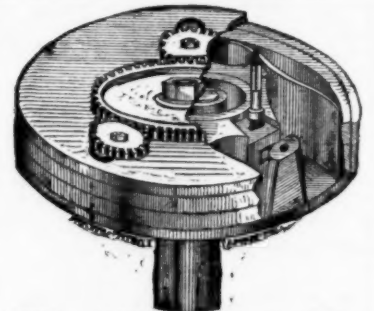
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The Boiler that made the hottest, driest and  
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Boilers in use for four years without getting dirty.

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The Best and Cheapest Non-Con-  
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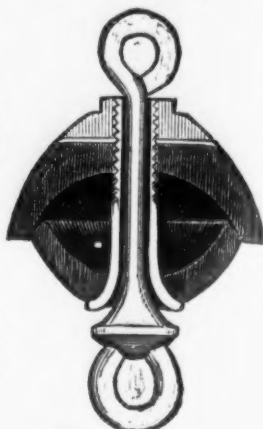
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(Patented May 17, 1878.)

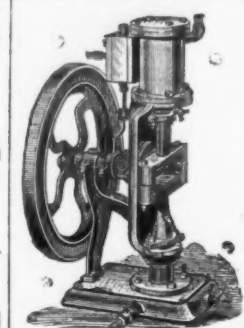
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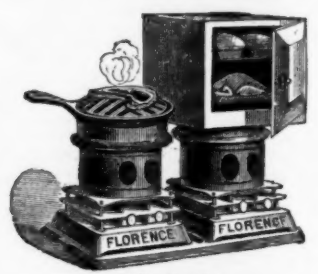
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ODORLESS OIL STOVE

MADE



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EXAMINE THIS AND BUY NO  
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Liberal Discounts to the Trade.

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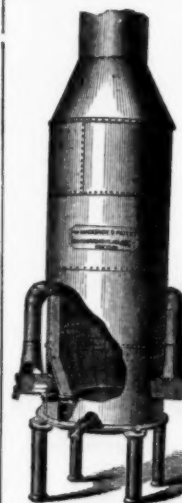
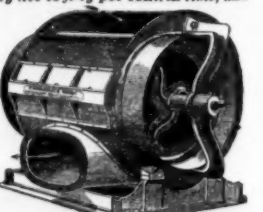
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St., Pittsburgh, Pa.; 67 Arcade, Providence, R. I.; 267 Middle St., Portland, Me.

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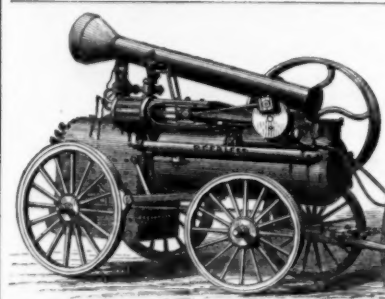
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This Cupola has made a great revolution in melting iron. It differs from all others  
in having a CONTINUOUS TUYERE, or in other words, the blast enters the fuel at all  
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an ordinary Cupola. It also enables us to save very largely in time and fuel, the ex-  
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combustion, extracting less carbon from the  
iron, making a softer and tougher casting.  
We manufacture these Cupolas of any desired  
capacity, numbered from 1 to 25, inclusive, the  
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PER HOUR—No. 1, one ton; No. 2, two tons; No.  
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Cupolas in every way, have increased their  
strength and durability, and sought to make  
them as convenient for working and repairs as  
our own, and the experience of our customers,  
could suggest.

## THE PEERLESS PORTABLE ENGINE, From 6 to 12 Horse-Power, and DOMESTIC Semi-Portable Steam Engine, From 2 to 4 Horse-Power.

The only Engines in the Market, at-  
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COLD BEARINGS.All parts interchangeable. Hardened connect-  
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Fry Pans.....	dis 80
Kara.....	dis 50







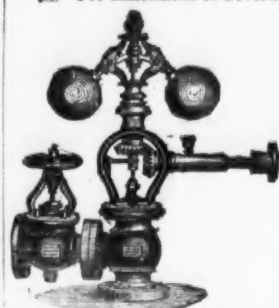
## Machinery, &amp;c.

## THE JUDSON GOVERNOR.

It is a common method to advertise Governors without cost, unless satisfactory to the customer, and then charge High Prices for doing what any good Governor will do. Various Governors inferior to the "Judson" are sold in this way, operating well enough for three months, to insure collection of the pay, but becoming useless after a year's wear—their construction lacking durability. The Judson Governor is guaranteed to be not only the best Regulator of Steam Engines, but also the most durable Governor made. Parties in buying other Governors should stipulate that their durability be guaranteed, and should also take care that they do not, for much inferior Governors, pay higher prices than those shown in the accompanying list. We guarantee the Judson Governor will do all any other Governor can do, and in accuracy and durability—the main essentials—we guarantee it shall do more.

Reduced Price List,  
FEBRUARY 1, 1877.

For dimensions of Governor, see Illustrated Price List.



THE JUDSON PATENT

Improved Steam Governor.

No Charge for Boxing or Cartage.

JUNIOUS JUDSON &amp; SON, Rochester, N. Y.

Size, Inch.	Plain.	Bright Finish.	Extra for Speed.	Stop Valve.
1 1/2	\$16.00	\$18.00	\$1.00	....
2	18.00	20.00	1.00	....
2 1/2	20.00	22.00	2.00	5.00
3	23.00	26.00	2.25	6.00
3 1/2	26.00	30.00	2.50	8.00
4	31.00	35.00	2.75	10.00
4 1/2	36.00	41.00	3.00	12.00
5	40.00	45.00	3.50	14.00
5 1/2	45.00	51.00	3.75	16.00
6	50.00	57.00	4.25	19.00
6 1/2	59.00	67.00	4.50	23.00
7	69.00	78.00	5.00	28.00
7 1/2	80.00	90.00	5.50	34.00
8	90.00	101.00	6.00	40.00
8 1/2	105.00	117.00	6.50	46.00
9	120.00	133.00	7.00	54.00
9 1/2	142.00	156.00	8.00	65.00
10	175.00	199.00	9.00	79.00
10 1/2	198.00	218.00	10.00	....
11	210.00	240.00	12.00	....

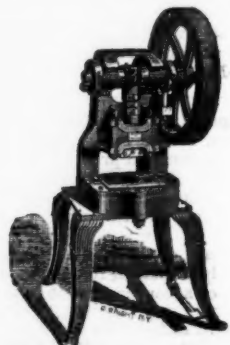
PRESSES, DROP HAMMERS, DIES,  
And Other Tools

FOR THE MANUFACTURE OF ALL KINDS OF

Sheet Metal Goods,  
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## BLISS &amp; WILLIAMS,

Manufacturers of all kinds of



## Presses, Dies and Special Machinery

FOR WORKING SHEET METALS, &amp;c.

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## SHAPLEY ENGINE.

Patented Feb. 10, 1874.  
Reissued June 22, 1875.

Compact, Practical, Durable and Economical.

Acknowledged to be the best in use. This boiler stands unrivaled.

MANUFACTURED BY

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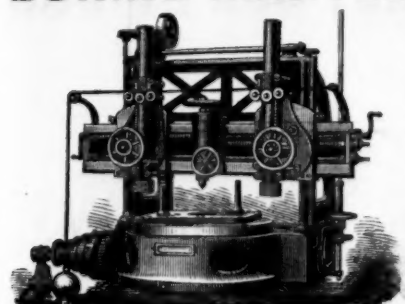
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Stationary Engines and Boilers.

Also Machinery for Mills of all kinds and Tanneries. Also their celebrated Bark Mills, acknowledged to be the best. Send for reduced price list circular.

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Special Pulley Turning Machinery,  
Engine Lathes, Iron Planers,  
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Car Axle Lathes and Wheel Bore.  
Latest designs and patterns. Prices very reasonable.NILES TOOL WORKS,  
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## Machinery, &amp;c.

Established 1848.

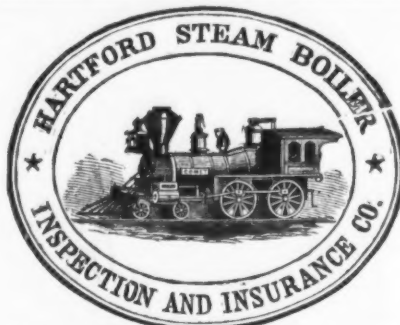
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Engineers, Iron Founders and Machinists.  
RAILWAY SHOP EQUIPMENTS.Our Steam Hammers, Lathes, Planers, Drills and Bolt Cutters  
Are of Improved and Patented Construction.Railway Turning and Transfer Tables,  
SHAFTING & MILL GEARING, a specialty.

## Pivot Bridges.

GIFFARD'S INJECTOR--IMPROVED, SELF-ADJUSTING.



Issues Policies of Insurance after a careful inspection of the Boilers.

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## STEAM BOILER EXPLOSIONS.

The Business of the Company includes all kinds of STEAM BOILERS.

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Patent Friction Hoisting Engines

For Mines, Quarries, Dock Building &amp;c.

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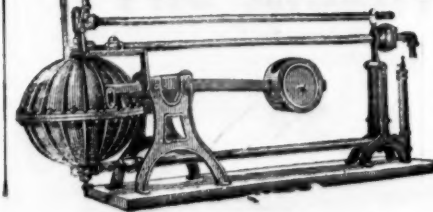
A few doors from Broadway.

Steam Gauges, Belting, Chucks, Drills, Packing, Governors, Jacks, Oil Cups.  
STEAM PUMPS for Pumping, Fire Purposes, and Boiler Feeding.

Also VALVES PIPING and VISES.

The Largest Stock in the City.

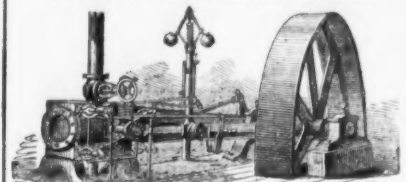
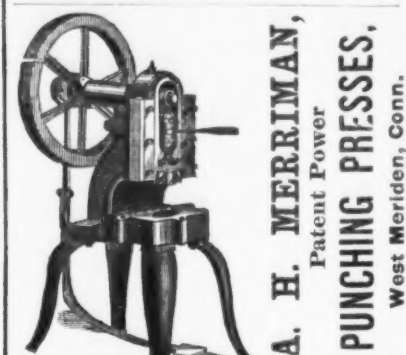
## The Albany Steam Trap.



This Trap automatically drains the water of condensation from Heating Coils, and returns the same to the Boiler whether the Coils are above or below the water level in Boiler, thus doing away with pumps and other mechanical devices for such purposes. Apply to

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Corliss Engine Builders,  
With Wetherill's Improvements.Engineers, Machinists, Iron Founders and Boiler Makers.  
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ESTABLISHED 1844.

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Steam Engines,  
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New Portable Engine

of 1877, of one horse-power, complete for \$125.

2 Horse Power.....225 1200

2 1/2 Horse Power.....250 1700

3 Horse Power.....275 2100

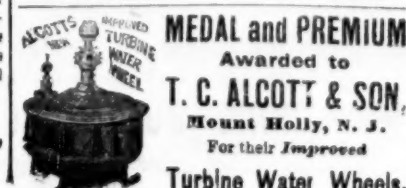
Can be seen in operation at my store. Send for descriptive circular and price. Address

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True Merit and Excellence is the Basis of all Success.  
THE EUREKA STEAM AND HYDRAULIC PACKING.

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Sole Manufacturers.  
The results of a long series of experiments made with a view of meeting all the requirements of a Perfect Packing. And we assert without reservation that it is the best article of its kind yet invented. It is made of the best materials, is elastic, pliable, and does not become hard by use consequently is easily taken out when renewal is necessary. It has a rubber center, rectangular in form, covered with a series of braids of linen, between which is placed a lubricative compound superior to anything ever before used for the purpose, and contains nothing that can in any manner cut, flake or gum the rods, no matter how long run. It has thus far received the highest praise of every engineer who has used it, and we have received many testimonials from the proprietors of Mills, Factories, Iron Works, &c., that it is the most durable, efficient and cheapest packing they ever used. All we ask is a fair trial, knowing it will convince better than any words of ours. Orders promptly filled. Wickesham & Co., Sole Agents, 59 S. Fourth St., Philadelphia.

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TOOL & MACHINE WORKS,Manufacturers of Engine, Brass Finishers' Wood Turners' Amateurs' & Jewelers' LATHES, Slide Rest, Screw Machines, Torret Heads, Screw Presses, Screw Clamps, Lathe Carriers, &c.  
440 N. 12th St., above Noble, Philadelphia, Pa.  
Israel H. Johnson, Jr. Joshua R. Johnson, Jr.MEDAL and PREMIUM  
Awarded toT. C. ALCOTT & SON,  
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For their Improved

Turbine Water Wheels.



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XXX Genuine...	35c	C.....	17c
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X.....	25c	E.....	12c
A.....	20c	F.....	10c

Note.—The above are my standard mixtures, and have given satisfaction wherever used, but I am prepared to make Anti-Friction Metal of any quality or mixture desired by the purchaser.

INGOT BRASS. | OLD METALS AND TURNINGS WANTED. | BRASS CASTINGS.

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SWEDISH STOCK, OIL-TEMPERED and WARRANTED.

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Established in 1844. The quality and reputation of these goods stand the same as the L'Hommedieu.

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Commenced making these goods in 1857.

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The first Double Cut Gimlet Bits made in America in their shop, 1855.

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Special attention paid to Machine Bits.

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Under Hainsworth's Patents.

We make Castings practically free from blow-holes, of steel which is as soft and as easily WORKED and WELDED as Wrought Iron, yet is STIFF, STRONG and DURABLE, with a TENSILE STRENGTH of not less than 65,000 lbs. to the square inch. In short, OUR CASTINGS UNITE THE QUALITIES OF STEEL AND WROUGHT IRON.

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WE USE NO CAST IRON.

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MACHINE BOLTS, HOT PRESSED NUTS,

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STEEL CASTINGS.

A Substitute for Steel and Wrought Forgings.  
Circulars sent on application.

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From 1/4 to 10,000 lbs. weight, solid, and true to pattern, of 5 times the strength of cast iron. Invaluable for Gearing of all kinds, Shoes, Dies, Hammerheads, Crossheads for Locomotives, etc. 12,000 Crank Shafts of this steel now running proved superior to wrought iron. Circulars and price lists free. Address CHESTER STEEL CASTINGS CO., Evelina St., Philadelphia, Pa.

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Light and heavy Steel Castings of superior metal, solid and homogeneous. All work guaranteed. Send for circular.

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Office: 307 Walnut St., Phila.

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R. E. DIETZ,  
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Manufacturer of

TUBULAR LANTERNS,  
"Catch-em-Alive" Mouse Traps.

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MANUFACTURERS.



CONCORD AXLES  
Warranted the best Article in the Market.  
MANUFACTURED ONLY BY  
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From New Patterns.  
NEW IMPROVEMENTS  
STRONG AND POWERFUL.  
Cost One-third Less than  
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SEND FOR CIRCULAR.  
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Machines  
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Wheels  
Guaranteed.  
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Manufacturers of Patent  
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FRICITION CLUTCHES  
For connecting Shafting and Gearing.  
Hoisting Machinery & Elevators, Shafting,  
Hangers and Gearing.  
Lafayette Street, PROVIDENCE, R. I.  
See cut of Elevator Hoisting Machine in issue of July 18, 1878, page 40.

PATTERNS, MODELS  
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For Water, Gas & Steam. Also  
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Will cut faster, wear longer, and slog  
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Manufacturer of all kinds of

First-Class Saws, Saw Frames, Cross-Cut Handles, Tools, Files, &c. Also Sole Proprietor and Manufacturer of the Genuine Patent Lightning Saw.

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TRIAL OF THE IMPROVED LIGHTNING SAW.

The Emperor Dom Pedro, accompanied by Director General Goshorn, Superintendent Albert, and others, visited Machinery Hall, at the Centennial on the evening of June 28th. Among other things inspected, at the invitation of E. M. BOYNTON, of New York, they witnessed a trial of the New Lightning Saw, patented March 26, 1876. Two men, with one of these saws, cut off a sound log of gum-wood, one foot extreme diameter, in seven seconds, or at the rate of a cord of wood in five minutes. Messrs. Corliss, Morell, Lynch, and other members of the commission, witnessed the trial and timed the cutting. The Emperor remarked, That was fast, very fast cutting. Last evening the Emperor made another examination of the saw.—Philadelphia Press, June 30.

"BOYNTON'S SAWS were effectually tested before the judges at the Philadelphia Fair, July 6th and 7th. An ash log, eleven inches in diameter, was sawed off, with a four-and-a-half-foot lightning cross-cut, by two men, in precisely six seconds as timed by the chairman of the Centennial Judges of Class Fifteen. The speed is unprecedented, and would cut a cord of wood in four minutes. The representatives of Russia, Austria, France, Italy, Spain, Belgium, Sweden, England, and several other countries, were present, and expressed their high appreciation."

Received Medal and Highest Award of Centennial World's Fair, 1876.

\$1000 Challenge was prominently displayed for six months, and the numerous saw manufacturers of the world dared not accept it, or test in a competition so hopeless.

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MOULDING SANDS.

Also FIRE SAND, FIRE CLAY, KAOLIN and all kinds of

FOUNDRY FACINGS.

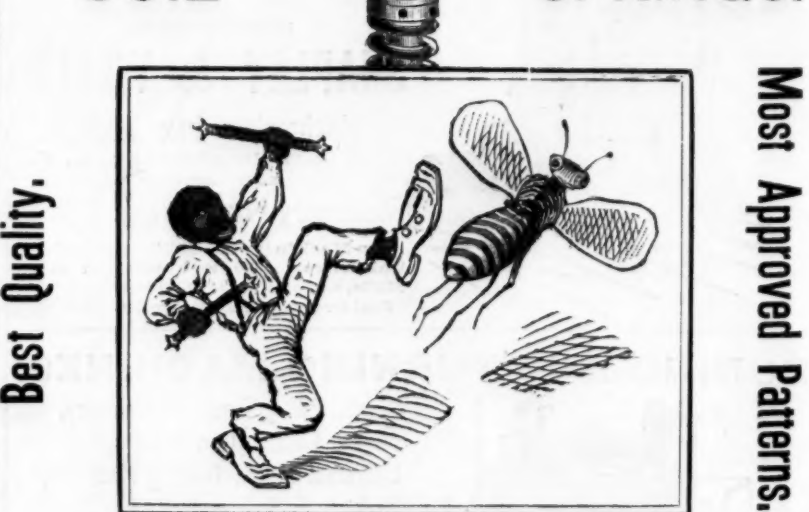
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PATENT COMBINATION WRENCH.

These Wrenches are made from the best of Wrought Iron, with Steel Head and Jaw, case-hardened throughout, and not only combine all of the superior qualities of our Cylinder or Gas Pipe Wrenches, but also all requisite Combinations of a regular Nut Wrench, thus making a combination which has no equal.

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ROD AND COIL DOOR SPRINGS.



Best Quality.  
Manufactured by  
VAN WAGONER & WILLIAMS,  
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Most Approved Patterns.